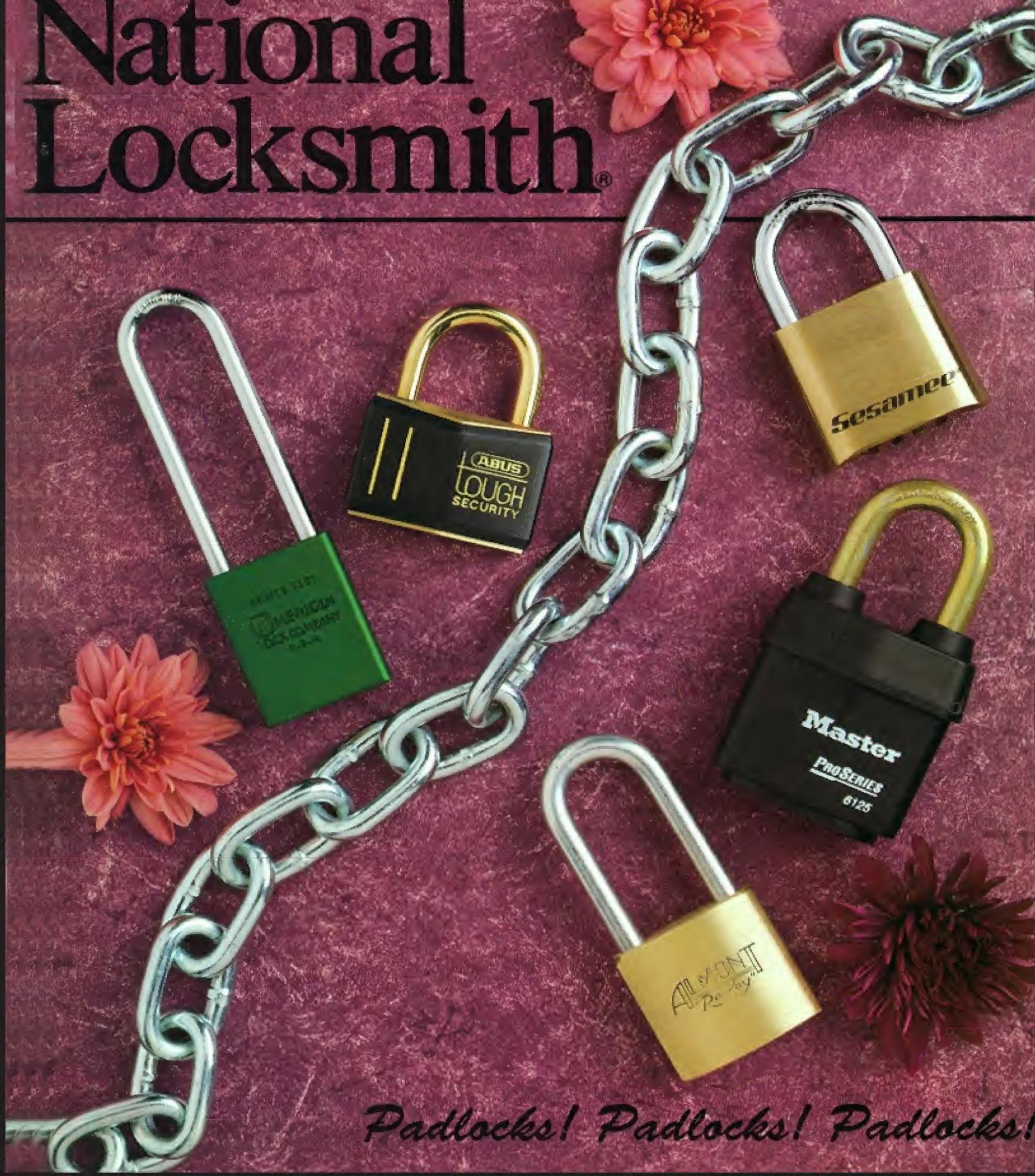


The National Locksmith®

May 1993



Padlocks! Padlocks! Padlocks!

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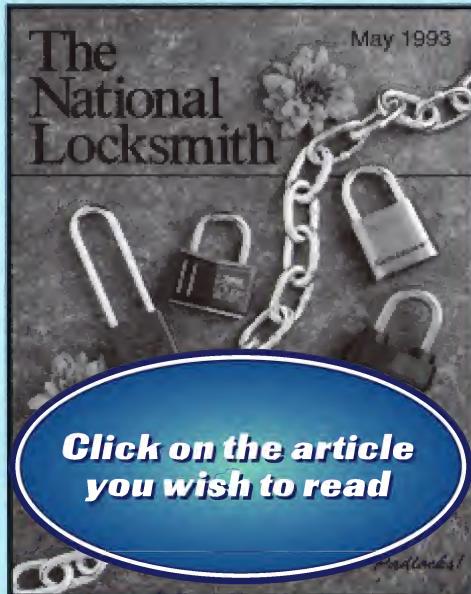
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Here is a code series for your code book collection and reference.



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This month's cover features padlocks from the following companies (in alphabetical order): Abus Lock Company; Almont Lock Company; American Lock Company; CCL Security Products; and Master Lock. Look for information on these products and many other padlocks in our Product Review section, page 48.

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Commentary

Join the National Safeman's Organization And Learn Safe Work!

Congratulations to the many locksmiths who have sent in (and for the most part, have passed) your Security Certificate Exams. Of course, many of you are still working on your tests, or you plan to get around to it soon. Remember, next month's issue will contain a whole new test section. So if you haven't yet completed and submitted the March test section, you might want to do that now. Otherwise, it will end up being a whole lot of work for you, trying to take both test sections at the same time. Or worse yet, you could fall behind.

Anyway, enough nagging from me! Knuckle down and take those March issue tests and send them in as soon as possible. That way when the June issue comes out, you won't be swamped with tests. And here you thought you were all done with school! It's hard to start studying again, isn't it?

Perhaps the best reason for joining and association or organization is to receive the benefit of any education that group may offer. Last year, we formed the National Safeman's Organization to help educate and inform professionals involved in safe work.

We have had a wonderful year with the NSO. Dave McOmie edits the NSO newsletter called *The National Safeman*. He also edits special technical membership mailings called the McOmie Files. The files cover a great variety of safe locks made over the years. Photos and templates with instructions give you virtually every possible way to open or defeat each lock.

Within a very short time, the NSO became very popular. I think this is because *The National Locksmith* and Dave McOmie had become very well known for excellence in safe publishing. (Do I sound like Rush Limbaugh here?) The NSO has approximately 1,300 full members at this time. Most of our members are full fledged safemen or

safewomen. They are long time professionals in the field of safe work.

We are very much dedicated to giving these people the finest value ever imagined in a safe organization membership! However, you should be aware that the NSO is not just for the old time safeman. If you have an interest in learning about safe work, then the NSO is also for you! Your membership will help you learn how to begin basic safe work and combination changing. We will inform you about what tools and equipment you need, and which you don't need.

In today's world, every locksmith is looking for sources of additional income. Consider that with the proper information, most good technical locksmiths can perform safe work. You can perform safe work, and earn additional profits in the security industry.

One thing is for sure, you will not hear complaints that the police are out opening safes for free! If you are interested in joining the NSO to learn additional skills as a locksmith/safeman, please give us a call. The NSO can help you along the way. See page 77 for more details.



Marc Goldberg
Editor/Publisher

Letters

Comments, Suggestions and Criticisms

The National Locksmith is interested in your view. We do reserve the right to edit for clarity and length. Please address your comments, praise, or criticism to Editor, The National Locksmith, 1533 Burgundy Parkway, Streamwood, IL 60107. All letters to the editor must be signed.

Industry Mourns Recent Losses

Dear Marc:

The Lock and Locksmith Industry has lost one of its moving forces. On the 14th of March 1993 Keith Levine died at his home after a short illness.

The Locksmith Association of Connecticut Inc. was founded by Keith and a small group of locksmiths in September of 1958. Keith was an active and moving force in this and other associations in the U.S., Canada and England. He will be missed by one and all.

On the 15th of March 1993, Sergis Grigorian also died at his home. He was a Charter Member of A.L.O.C. and will also be missed by one and all who knew him.

John Fenner
Connecticut

Editor's Note: Keith Levine served on the editorial Advisory Board of The National Locksmith. Over the years, he would often call to offer advice, or sometimes just a joke. We'll miss him.

Three Cheers For Security Certificate Program

Dear Marc:

The person who designed the Security Certificate Program test should be commended to the fullest. I'm not a big business, but rely mainly on residential and commercial type work.

My one fear is foreign auto work. I've taken courses and read many books yet I lack the confidence. I own over \$1800.00 worth of equipment to work on autos but again I lack the confidence.

After reading your articles on the test subjects in your January, February, and March issues I took another look at the foreign auto aspect of the business. The article on the Lexus and Part I and II of the Honda gave me a different perspective on this area. Out of five books that I've read, I've learned more from your articles than these other books because of the simplicity in which your explanation talked us through each step plus the in depth photos.

It is a shame to put out over \$1000.00 for equipment when subscribing to a professional type journal teaches us ten fold.

I look forward to continuing my subscription.

Jerry C. Guevara
Colorado

Association Takes Stand Against Drunk Driving

Dear Marc:

The following Declaration Of Policy was adopted by the GMLA, Green Mountain Locksmiths Association, Inc.

The Green Mountain Locksmiths Association, Inc., in an effort to reduce the number of injuries and deaths due to driving while intoxicated, declares that it is opposed to response to a lockout service request where the intended driver of the vehicle is obviously above the limit which defines drunk driving.

We realize that we cannot dictate to locksmiths as to how an individual's business shall be operated, but rather to make it policy to encourage all locksmiths to adhere to this practice. We believe it to be in the public interest to make this Declaration of Policy.

Richard Grant,
President
GMLA
Vermont

Do Not Duplicate... That Means You!

Dear Marc:

Your "Do Not Duplicate" Commentary in the March 1993 issue of *The National Locksmith* strikes a raw nerve.

We are institutional locksmiths and

Continued on page 8



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Exit Devices.**

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Continued from page 6

have been marking our keys with "Unlawful To Duplicate" for years in the hopes that our state was going to pass regulations in regards to such markings. Every time the proposal comes up, it is always defeated due to some "political" reason.

In the meantime, a certain "nationally recognized" locksmith, who writes for a competing trade magazine and whose shop is down the hill from us, goes out of his way to put on "special" keyways on a separate shelf just for the benefit of duplicating keys for students connected with our institution. He has even purchased one available key blank to duplicate keys and files the keyway to make available to the student "special keyways" that are not available to him but that we use. Then, on top of that he charges a "special" much higher price for these copies.

Here is a case of ethics where we deliberately stamp our keys to discourage the rest of the locksmiths in the area from duplicating our keys for students and they deliberately go out of their way to purchase available keyblanks and even file the keyway to make unavailable keyways available.

Paul Maziarz
Rhode Island

Technitips Recognition Motivates the 'Little Guy'

Dear Marc:

Thank you for the recognition in the magazine! Winning the February Technitips Best Tip is to say the least, a boost of ego. The prize is nice also, but to see one's name in a large publication, makes a little guy feel part of the establishment.

It is a form of motivation that one needs from time to time.

Brad MacKenzie
Ohio

C.O.D. Is Always The Best Policy

Dear Marc:

On October 15, 1992 a call was received from the Cross Country Motor Club of 4040 Mystic Valley Parkway, Boston, MA 02155 asking for assistance to a member locked out of her '90 Oldsmobile. Authorization claim number was given and prompt payment promised for courtesy credit. Repeated requests by mail and telephone have produced only false promises but no payment as of March 10, 1993. In the future work will be considered COD before the keys are

given to the recipient of service. Unfortunately club members must pay first and collect from the clubs later. Locksmiths are advised to hold on to those car keys until they get paid for whatever services they do provide. It is sad to learn of ungratefulness and dishonesty the hard way.

Les Harris
Connecticut

Post Office Now Installs Mailbox Locks

Dear Marc:

I just found out a bit of interesting information.

A local property management company told me that the post office will now install a new mailbox door lock for condominium and apartment mailbox banks for five dollars.

I am now retired, but used to do a good deal of business changing locks or making keys for these mailboxes. People were always losing their mailbox key, much more so than car keys.

I charged a bit more than five dollars though.

Don Thompson
California



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Technitips

Helpful Hints from Fellow Locksmiths



Send me your Technitips.
Who knows, you may be
our next winner! c/o The
National Locksmith, 1533
Burgundy Parkway,
Streamwood, IL 60107.

by Robert Sieveking

May's Best Tip

This Technitip regards servicing the Master Lock Company Wall Vault. The lock looks to me to be the same as their standard combination locker lock. I was called to change the locks on a residence, and while there, the owner showed me the Wall Vault, and asked if I could find the combination and change it to a new combination. The previous owners of the house had left the vault door locked open. Remove the lock from the door, and holding it in your hand, apply end pressure to the bolt. This forces the fence into the wheel pack. There are only two wheels and a driver. Dial right. You will feel a pronounced drag, caused by the end pressure. The gates will

These Prizes Awarded Each Month!

All-Lock A-7000 VATS Decoder
HPC Pistolpick

Silca Rubberhead Keyblanks (100 blanks)

ESP PR-13 Professional Lock Pick Set

Sieveking Products EZ-Pull GM Wheel Puller

Fort Lock Merchandise Rack

Submit your tip and win!

be found as the fence "clicks" over them. If you find a number, leave the wheel at the found number and dial left to find the second number. The secret here is to count your turns. This will tell you which wheel is indicating its gate. When you have found two numbers, set the combination wheels to one of the "two" possible combinations and rotate the dial to find the last number. This manipulation should

take only a few minutes.

The customer asked to have the combination changed also. Illustration one shows the back of the dial, that had been removed to disassemble the lock from the door. Pry gently around the die cast center hub, to separate the dial from the hub. Observe the location of the index nib before you separate the parts. Advance the dial from the original set point, adding or

How To Enter

All you need to do to enter is submit a tip, covering any aspect of locksmithing to *The National Locksmith*. Certainly, you have a favorite way of doing things that you'd like to share with other locksmiths. Why not write it down and submit it to: Robert Sieveking, Technitips' Editor, *The National Locksmith*, 1533 Burgundy Parkway, Streamwood, IL 60107.

Tips submitted to other industry publications will not be eligible! So get busy and send in your tips today. You may win cash merchandise, or even one of many key machines or code book sets! At the end of the year, we choose the winners of the listed prizes.

Last year dozens of people walked off with money and prizes. Wouldn't you like to be one of the prize winners for 1992? Enter today! It's a lot easier than you think!

Every Tip Wins 'Locksmith Bucks'!

Yes, every tip published wins a prize. But remember, you must submit your tip to *The National Locksmith* exclusively. Each and every tip published in Technitips wins you \$25.00 in Locksmith Bucks! Use this spendable cash toward the purchase of any books or merchandise from *The National Locksmith*. You also receive a Bonded Locksmith bumper sticker and decal. Plus you are now eligible for the really big prizes!

Best Tip of the month prizes!

If your tip is chosen as the best tip of the month, you will win \$50.00 in cash as well as \$35.00 in Locksmith Bucks! Plus you will receive a Bonded Locksmith bumper sticker, decal and a Locksmith Cap. Plus, you may win one of the annual prizes.

Master Lock Co. "Wall Vault" servicing

Pry up gently,
to separate the
dial from the
die cast center hub.

Illustration 1

subtracting "5" for each notch you move. Add or subtract the offset number to all three numbers of the combination. Reassemble the dial and assemble the lock and dial/escutcheon to the door. Try the new combination three times with the door open, before closing the vault.

Bill O'Dwyer,
Connecticut

All-Lock VATS Decoder Winner

This Technitip is a very simple one, but any locksmith working on auto door locks will appreciate its importance. While working inside most auto doors, it is not uncommon for the locksmith to cut a wrist or knuckle now and then. The ragged edges of the punched door metal can be a serious hazard. At the very least, it can catch and rip a good work shirt in a second. My Technitip is for a simple solution. I've found that plastic door edge trim, the type that is available in most parts and discount stores, can be quickly applied around the hole you're working through and will absolutely prevent cuts scrapes and rips. After you're done with the job, snap the trim off the metal and keep it in your tool box. It's re-usable.

If you don't feel that the door edge can be used in a particular door, you can use duct tape to cover the sharp edges. Either way, safety and prevention make more sense than first aid. Work smart, work safe.

George Meyer
California

Silca Keyblanks Winner

Because of the differences that have been noticed in the arrangement of wafers found in the 84 1/2 + Ford 10 wafer lock systems found on various years of the same model or make of vehicle, this Technitip brings together the key making "need to know." In table two you will find the wafer location information on late model Ford, Ford Escort, Ford Explorer, Mercury Tracer, and Mercury Villager. The information will lead you to the successful discovery of the cuts for a complete

working key.

The 1992 door and hatch locks for some of these vehicles have only five wafers, in positions 4 through 8. Therefore, it is necessary to "progression" cuts 9 and 10. (Tryout keys are also an option here.)

With the chart shown in table three, you should be able to obtain a working key with three (3) or fewer blanks, as you can see. Code cutting the second side of a blank that has been "nibbled" down to 6 - 6 is not always possible. Code cut one side of the blank, and duplicate the cut key

10 Cut Wafer Chart

Standard 10-Cut 84 1/2 up
(cuts bow to tip)

Positions	1	2	3	4	5	6	7	8	9	10
Door	x	x	x	x	x	x				
Ignition				x	x	x	x	x	x	x
Trunk*	x	x	x	x	x					

*Std. 5 pin Ford Sec. Blank

Ford Escort / Merc Tracer 1991
(cuts bow to tip)

Positions	1	2	3	4	5	6	7	8	9	10
Door		x	x	x	x	x	x	x	x	x
Ignition			x	x	x	x	x	x	x	x
Hatch	x	x	x	x	x	x	x	x	x	x

No locking glove box. Obtain cuts 4 thru 9 from door or hatch (hatch is easiest). Progress cut #10 in ignition to complete the key.

Ford Escort, Explorer & Merc Tracer 1992
(cuts bow to tip)

Positions	1	2	3	4	5	6	7	8	9	10
Door		x	x	x	x	x				
Ignition			x	x	x	x	x	x	x	x
Hatch	x	x	x	x	x	x				

Note: Cuts 4-8 from door or hatch cyl. Two positions (9 & 10) must be progressed in the ignition to obtain a complete working key.

Merc Villager 1993 (cuts bow to tip)

Positions	1	2	3	4	5	6	7	8	9	10
Doors	x	x	x	x	x					
Ignition			x	x	x	x	x	x	x	x
Glove Box					x	x				

Note: Cuts 4-8 from door or hatch cyl. Two positions (9 & 10) must be progressed. Glove box under front pass seat for #10, then progress #9 in the ignition to obtain a complete working key.

Table 2

10 Cut Progression Chart

IF Cut #8/s	1st Key	2nd Key	3rd Key	4th Key
1	1-1	2-1	3-1	
1	1-2	2-4	3-2	
1	1-3	3-5		
1	2-3			
1	3-3			
1	3-4			
2	1-1	3-1	4-2	
2	1-2	3-2	4-3	
2	1-3	3-3	4-5	
2	2-1	3-5		
2	2-2			
2	2-3			
2	2-4			
2	3-4			
2	4-4			
3	1-1	2-1	3-1	4-2
3	1-2	2-2	3-2	
3	1-3	2-3	3-5	
3	2-3	2-4		
3	3-3	3-4		
3	4-3	4-4		
3	5-3	4-5		
3	5-4			
3	5-5			
4	2-1	3-1	4-2	
4	2-2	3-2	4-4	
4	2-3	3-3		
4	2-4	4-3		
4	3-4	5-3		
4	3-5	5-4		
4	4-5			
4	5-5			
5	3-1	4-2	5-3	
5	3-2	4-3		
5	3-3	4-4		
5	3-4	5-4		
5	3-5			
5	4-5			
5	5-5			

Table 3

Continued from page 12

onto both sides of a second blank.

These locks are modified versions of the original 10 wafer system. We know from the code series, that there are no adjacent cut differences greater than 2. (Safety factor or MACS - 2)

Tracer and Escort both have hatch backs. The manual trunk release beside the drivers seat will allow you to open the hatch. It is, in my opinion, easier to remove the hatch lock than the door lock cylinder to obtain the cuts in positions four through eight. This needs only be done if you are not able to "read" the wafers.

Remember: Cuts 1, 2, and 3 are one's or no cut. Number 4 space can be any depth, from one to five. If the #4 space is a 6 depth, it is a good idea to make a cut in the #3 space that is (6-2=3) a three cut. The 2 depth safety factor should be observed.

The door and hatch locks on these vehicles exhibit very loose tolerances. It is not unusual (generally found when cutting a 4 depth) to have one or more cuts off by a full depth and still work. However the ignition cylinders do not have the same wide tolerances. In order for the key to function properly in the ignition, the

cuts must be "right-on." If you have one wafer that is off by one depth, (high or low), you will not be able to progression the last cuts to obtain a working key. Even if the last cuts are the proper depth, the key will not work.

This information should answer most all the questions concerning the easiest and most expedient (profitable) method of servicing these autos. Good Luck.

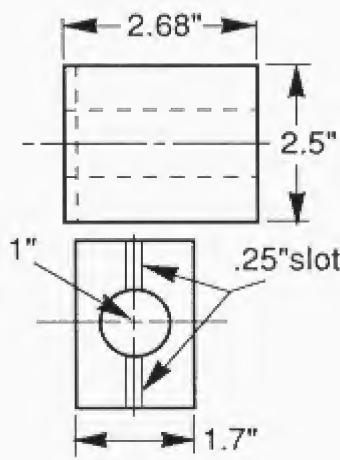
Jay Christie
North Carolina

HPC Pistolpick Winner

This Technitip is for a simple adapter for your lock boring jig, that helps dodge raised trim on some metal doors, and insures perfect alignment with pre-drilled edge bored holes. I have had difficulties aligning my boring jig with pre-drilled (edge bored) metal doors. Doors with raised ornamental trim or window molding make the combination jig impossible to position and clamp properly to the door.

The wood adapter shown in illustration four solves the problem.

Door Boring Jig adaptor



The hardwood block is slightly less than 1-3/4" thick, to allow the jig to clamp properly. It is 2-1/2" high x 2-11/16" long. A one inch hole is bored squarely through the center, as you see in the illustration. The quarter inch slot in the face of the block aligns with the rib in the edge bore drill guide, to give better stability to the adapter. If you have a Kwikset or



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Weiser jig, you will want to groove the adapter as shown.

A six inch piece of one inch wood dowel is also needed. Center the end of the dowel, and use a small finish nail to make a marking point in the end. The dowel, will be used to mark the edge of the door. In some cases, it is a good idea to mark the edge bore location and drill the door without the jig.

The spacer block adapter is inserted into the four way combination 2-3/8", 2-3/4", 3-3/4", 5" backset Kwikset or Weiser jig. The adapter pushes the jig away from the edge of the door to allow the outboard bushings (3-3/4", 5" drill guide) to be used to locate a 2-3/4" backset hole. This avoids the necessity of modifying the installation jig to drill doors that have raised trim or window molding. Insert the 1" dowel into the jig and adapter, when assembling the jig to the door. This will insure proper alignment. Drill the side holes as usual, and mark the location of the edge bore with the marking point of the dowel.

The 1" dowel is also used to align the jig on doors that have a pre-drilled 1" edge bore hole. Remove the plastic cap which conceals the edge bored

hole in the door. Insert the dowel through the edge bore drill guide of your jig, and use the dowel to align the jig over the pre-drilled hole. Tighten the jig to the door for perfect alignment.

Royce Evans
Ohio

ESP Pickset Winner

In reference to Bill Hatfield's Technitip on Sentry safe combinations, published in the March issue. I have found a similar situation with Uscan import fire safes. There are twelve holes for combination changes in the drive cam. A combination will "advance" by seven numbers with each hole, compared to the ten number offset with the Sentry safes. The fourth number (driver) does not change. Here are a couple of combinations I have found.

1. 79R, 95L, 35R, 73 to open
2. 28R, 44L, 84R, 15 to open

If we advance these combinations, in seven number steps, we find a relation in the combinations, with the exception of the "drop-in." (See table 5.) I am sure there are more

Combination Table USCAN fire safe

Right	Left	Right	open
79	95	35	73
86	02	42	
93	09	49	
0	16	56	
7	23	63	
14	30	70	
21	37	77	
28	44	84	
35	51	91	
42	58	98	
49	65	05	
56	72	12	
63	79	19	

Table 5

combinations than those I have shown, but for trial combinations, these are a good start.

Richard Garoppo
California



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E-Z Pull GM Wheel Puller Winner

This Technitip is in reference to lock cylinders by Master Lock Company. The knob cylinder replacement cylinders in the Weiser/ Composite and Schlage keyways are furnished without keys. This makes it necessary to pick or shim the cylinders before they can be disassembled and recombined to the customers key. I have found that the Kwikset depth and space key #4 will operate the Composite cylinders, and the Schlage depth key #5 or #6 will operate the Schlage cylinders. This will vary, I'm sure, but the pins found in the cylinders can be used to restock your pin kit if you identify the pin length by knowing the depth key used to operate the cylinder.

This is better than having the cylinders "zero-bitted" and ending up with a bin full of zero depth pins that you can't use. By rotating through the various depths, the new uncombined cylinders furnish pins to replace those used in combining. The cylinders are easily opened with a set of depth and space keys.

R. L. Edmond
Ohio

Fort Lock Display Panel Winner

I have enjoyed the Technitips column for many years, and have always wanted to submit a Technitip of my own. I thought everyone was aware of the easy way to open Sentry fire safes, until I found some of the competition drilling and manipulating for an opening. The one very easy way to open these safes is to call Sentry with the serial number and ask for the combination. Although it may not take some locksmiths very long to manipulate these simple locks, I'll guarantee that I can call and get the combination faster and easier than manipulation, and with much less damage than drilling.

The serial number for the container is on the hinge or under the opening handle. If it is under the handle, read it with a mirror. Call Sentry, at (800) 828-1438 and give them the serial number. If you are a registered locksmith, with them, they will give you the combination over the phone. If you call in advance, they will give you their fax number. Fax them your business license, your yellow page advertisement and your social security number. Your social security number is your identifier. If you have an ALOA

number, they will check you out through ALOA. Most times the combination will be as they give it to you. If the customer has changed the combination, use the technique illustrated in the March 1993 Technitip written by Bill Hatfield, to progress the combination to find the correct numbers. The last number of the combination, the combination number of the driver, does not change.

Thank you to all the locksmiths that have helped me, by contributing their best Technitips and discoveries over the years. I hope this helps another locksmith like myself.

Kevin D. Monroe
Washington

This Technitip concerns a simple reversible method of converting a Sargent "eight-line" entry or locking function to a passage or non-locking function. I recently had a customer request that I convert an "eight line" Sargent entry function lockset to a passage or non locking function. This was a temporary measure, to avoid the need to distribute keys during a move. The lock had to be returned to its regular locking function after the move. After studying the lockset, the solution was quite simple. By removing the locking plate, as you see in illustration six, the lock could not be locked. The locking plate can be easily disassembled from the aligning tube assembly without damage to the assembly. By storing the locking plate behind the inside rose, it was handy to restore the locking function when the customer was ready.

Sargent "Eight-Line" Conversion to "Non-Locking"

Aligning Tube Assembly

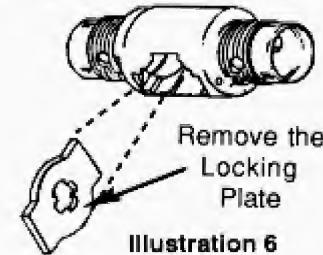


Illustration 6

Larry Wright
South Carolina

Here is a little Technitip for making those hardened steel punches for hard plate punching or one of those side drill bolt attacks. The next time you remove a Kryptonite bike lock, instead of throwing it away (assuming that it was not worth repairing or keying) cut the straight lengths of the "U" bar to remove the curved portion.

These sections can be cut to any convenient length. The easiest method of cutting these is with an abrasive cut off wheel. Once cut to the desired length, the tip can be ground to a convenient flat chisel or pointed tip. The large diameter hardened stock is great for bolt punching. The case hardening leaves a tempered core, that prevents the punch from shattering in use. You may need to dress the tip to prevent it from mushrooming. Weld a nut over the striking end of the punch for a larger striking target and minimized mushrooming of that end. Hold the punch with a punch holder, to avoid a "miss and hit" knuckle injury, and wear those safety glasses.

Jason Frank
Iowa

This Technitip concerns a sliding door lockout, that was unique. The customer was locked out of his home, with his keys in his hand. The residence, by design, was only accessible through a pair of Anderson sliding glass doors. It seems that when the customer slammed the door, the wood dowel, that he used to block the door from the inside, had fallen into the track and blocked the inside door from being opened. The lock worked fine, but the door could not be opened.

My solution was to pry the inside (sliding door) away from the outside (stationary door) with a wedge. Much like opening a car door at the weather strip. A Slim-Jim with a slight bend was then slipped through the crack between the doors and used to flip the blocking stick out of the track. Lift the sliding door slightly with a wide flat bar to allow the dolly wheels at the bottom of the door to ride up and off the bottom track slightly. The door can not be lifted out of the track, but the wedge will allow you to open a crack for your Slim Jim tool.

Jerry La Pierre
Maine

Newsmakers

New Products and Industry News

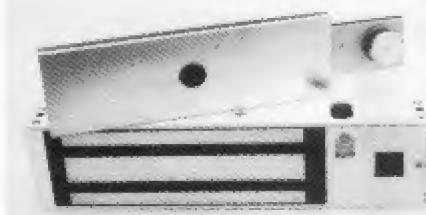
Rofu 8011-003 Time Delay Egress Lock

Rofu International Corporation introduces a new generation of self contained microprocessor Time Delay Egress locks.

The Rofu 8011-003 fully complies with N.F.P.A. 101 Life Safety Code and is a state of the art 1200 lb. electromagnetic lock. The lock contains a highly sophisticated microprocessor unit with many advanced features of control and notification. The 8011-003 was designed for user friendly operation and has a simplistic installation and maintenance routine.

All electronics, control components, alarm sounder and wiring terminals are contained within the wiring compartment of the lock.

The 8011-003 can be used as a single door lock or the same lock can be used in multi-door configurations using the Rofu 5 or 10 zone control and annunciation panel.



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LCN Safety Guard Protects Children

Fingers pinched in a closing door is an all too common occurrence in schools, restaurants, nursing homes and other public facilities. Injuries are usually severe.

The new LCN Safety Guard is designed to protect children and adults by covering the opening between the door (interior only) and frame (hinge edge) where most hand injuries occur. This protective product is lightweight, easy-to-install, UL listed and has been tested to over one million opening/closing cycles. Safety Guard has a one year warranty and is in compliance with fire door requirements and ADA (Americans With Disabilities Act.)

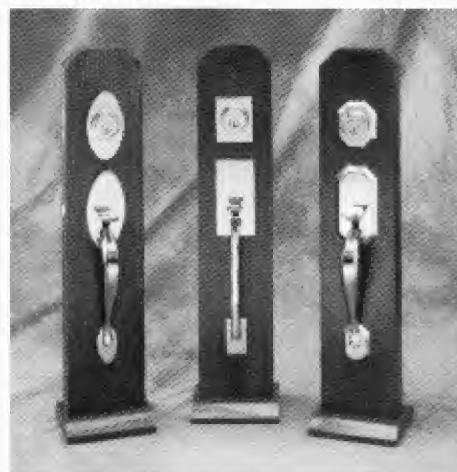


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Handlesets Added To Master Door Lock Line

Three handlesets, the Richmond, Dallas and Plymouth, are being added to the Master Lock high-security line of door hardware.

The Richmond features an elegant oval face and curved handle; the Dallas is sleek, with a rectangular face and handle, and the Plymouth has a handsome, octagonal face with sweeping handle. These handlesets complement any style home and fit most doors. They feature: Grade 2 deadbolt security rating for maximum protection, exclusive "hands-free" mounting, which allows quick installation, keyed-alike convenience and a full lifetime warranty and made-in USA construction.



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Hiawatha's 1993 Catalog Now Available

Hiawatha, Inc.'s 1993 catalog features a full line of entrance push and pull bar combinations in a wide variety of tubular and bar stock metals. Finishes include polished or satin finish in brass, bronze and stainless steel. Hiawatha also introduces contemporary shower door hinges for 3/8" and 1/2" frameless glass shower doors in chrome and brass polished finishes.

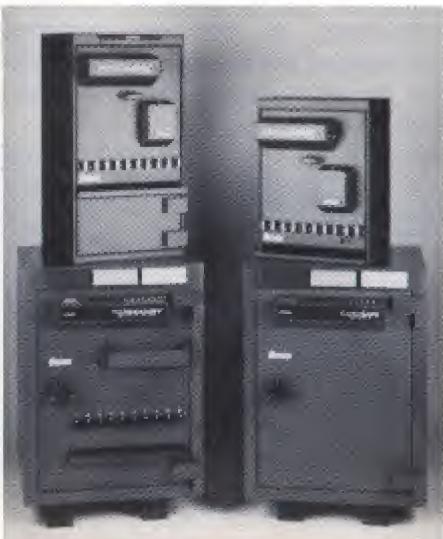


For FREE Information
Circle 431 on Rapid Reply

Armor Safe Adds CacheSYSTEM

Armor Safe Technologies, has acquired the CacheSYSTEM line of automated cash dispensing machines.

Armor Safe Technologies already manufactures safes approved by Underwriter Laboratories (UL) for various banking and commercial industries and the U.S. Government. The acquisition of CacheSYSTEM



enables Armor to capitalize on their problem-solving capabilities and offer customers improved satisfaction with an expanded line of custom designed cash controllers that offer both manual- and electronic-controlled access.

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Point Of Purchase Videos From Art's Lock Shop

Art's Lock Shop, and Capricorn Video Productions announce the introduction of the "Silent Partner" point

of purchase video series. Each professionally produced VHS tape is designed to present a set of informative sales generating messages to customers, while they are in the locksmith's place of business.

The "Silent Partner" video tapes deliver hundreds of messages on screen every hour, and are available in the standard version, or customized, with the locksmith's company name and chosen phrase appearing every fifth message.

For FREE Information
Circle 433 on Rapid Reply

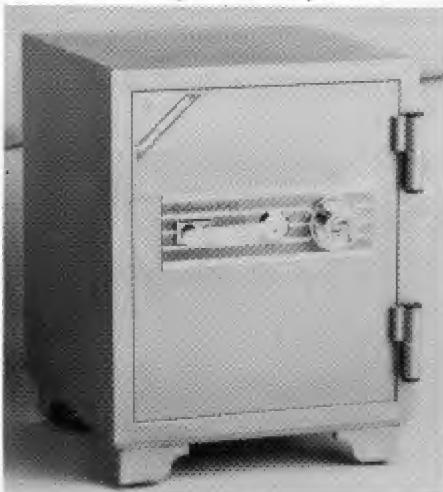
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Frantech To Distribute Diplomat Fire Safes

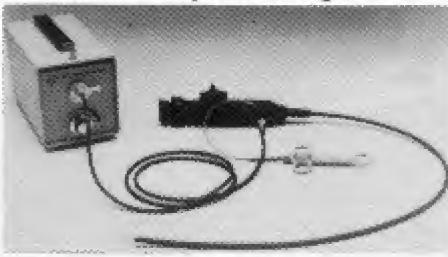
Frantech Corporation is now distributing the Diplomat line of two-hour fire safes. Available in 11 sizes, the Diplomat fire safes offer excellent fire protection and have passed several rigorous fire tests. A special component, Syryronite insulation, is found in the body and door of the safes to absorb heat generated by a fire.



For FREE Information
Circle 434 on Rapid Reply

MDS Introduces New Flexible Fiberscope

A new flexible fiberscope from MDS (Medical Diagnostic Services) will be introduced to the locksmith safeman marketplace during 1993.



The new PS-2000 offers features not available on other scopes on the market and is reasonably priced.

For FREE Information
Circle 435 on Rapid Reply

Leslie-Locke Introduces Heavy Duty Window Guard

Leslie-Locke has added the heavy duty "AS2" series to its line of village Ironsmith residential window guards. The "AS2" Series features solid vertical bars for extra protection against intrusion.

For style and appearance, each "AS2" guard includes decorative scrollwork, and the "odd-numbered" bars are twisted for an attractive spiral look. In addition to solid vertical bars, strength and durability features include all steel, all welded construction.

Horizontal bars are 1/2"x1/2" tubing and accept standard Village Ironsmith brackets and accessories. The "AS2" Series comes in a broad range of sizes to fit almost any window, and are available in black, white and (on the west coast) navajo white, baked on powder coating.

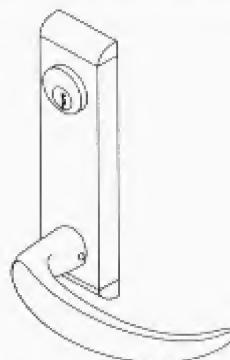
For FREE Information
Circle 436 on Rapid Reply

NT Monarch Adds Two New Trims

NT Monarch Hardware now offers two new trim designs manufactured by NT Falcon Lock, its sister company in the Newman Tonks family of companies.

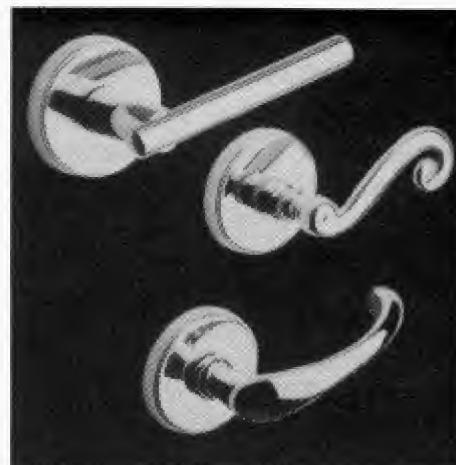
The new designs are Quantum and Capri; both are available in escutcheon and rose trims.

The new trim designs are in keeping with NT Monarch's commitment to its customers to offer a full range of functions, finishes and trim designs.



Both trim designs have a 5-1/4" lever, 2-3/8" x 8-1/4" escutcheon and 2-5/8" rose diameter. The Quantum has 3" projection; the Capri has a 2-7/8" projection.

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applied coating for lasting beauty. Pictured from top to bottom are the Newport, the Monterey and the Aspen, all of which are suitable for closets, bedrooms and bathrooms. Leversets in the Manhattan collection have a full lifetime warranty.

For FREE Information
Circle 438 on Rapid Reply

New Trine Wireless Chime Intercom System

Trine Products Company has introduced a unique, low cost, two-way communication system whose signal passes through doors, walls or floors without requiring interconnecting wires. It can be installed in as little as 15 minutes.

The system offers an option to the installer, a two-way switch in the exterior unit can either be set to activate for one minute, after which the unit automatically shuts off, or, be set for normal operation, where the button is simply pushed in to speak and released to listen.

Trine's wireless chime intercom is available in three channels, to eliminate the possibility of false triggering. If, for any reason, interference is encountered, the unit can be exchanged for one with another channel setting.



For FREE Information
Circle 439 on Rapid Reply

Take Manhattan Weiser Leversets

These European inspired designer leversets from Weiser Lock's Manhattan collection feature solid brass levers and roses and are finish protected with an electrostatically

Test Article #13
General
Security

To be tested in June 1993 issue.
 Details in insert in front of issue.

This final article dedicated to mortise lock assemblies is on the Schlage L9000 series mortise lock.

As a short history, the predecessor to Schlage's L series was the K series. This particular unit and parts are no longer available through Schlage. The L series found its beginning in 1984.

The L series uses a full 3/4" throw, two-piece, anti-friction latch, and where used, a 1" throw deadbolt.

All trim (except dummy) utilizes an inside and outside 5/16" spindle.

There are three features of the L series that are of importance to the locksmith. The first is the ability to rehand the unit without disassembly. As illustrated by photographs one, two and three, rehanding the unit is a matter of pulling the latch out from the casing far enough to turn.

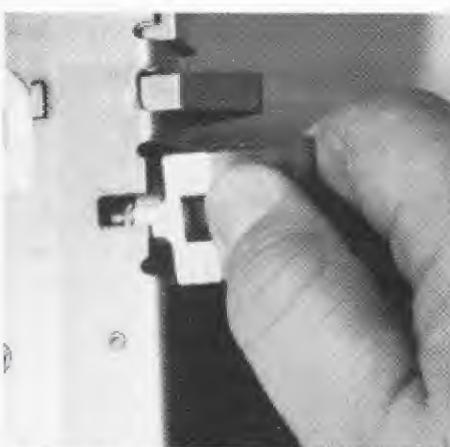
The second feature is the ability to change the locking side of the unit without disassembly. Typical to most mortise assemblies is the need to open the case and move the locking hub to the correct side of the lock. With the Schlage unit, it is simply a matter of removing a screw (called the catch screw) from one side of the case and putting into the other side of the case. (See photograph 4. and 5.)

The final feature is that the same lock body is used for either knob or lever trim. The extra torque incurred by lever trim is countered by spring cages that are added to the lever trim. (See photograph 6.) This, of course, means that knob trim can be converted to lever trim without the need to upgrade the lock body or buying additional conversion kits.

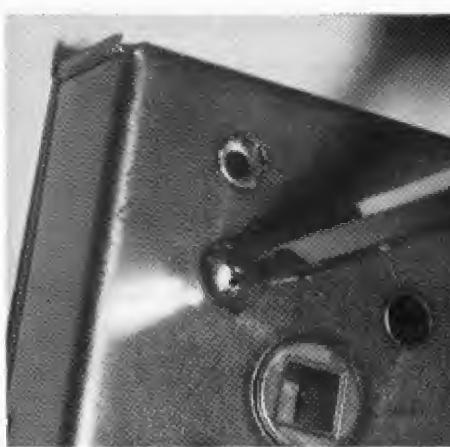
The spring cages (one for each side of the door) are part of the lever trim package. As seen in photograph seven, each cage surrounds the spindle. During installation, the arrows on the cage must be placed such that they follow the direction of the turn on the lever. When the trim is

Schlage Mortise Locks

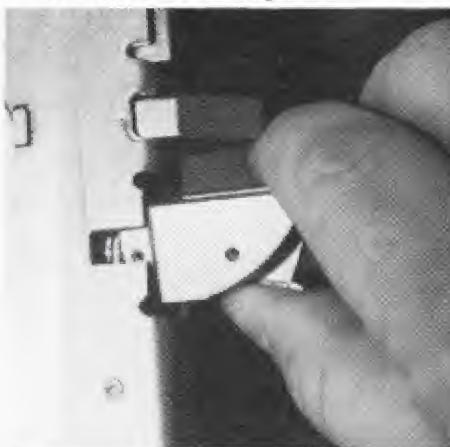
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1. To change the hand of the Schlage L9000 mortise lock, simply pull the latch out from the body...



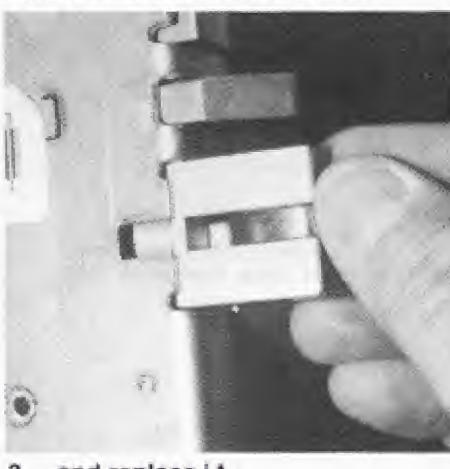
4. To change the handing of the lock, remove the catch screw...



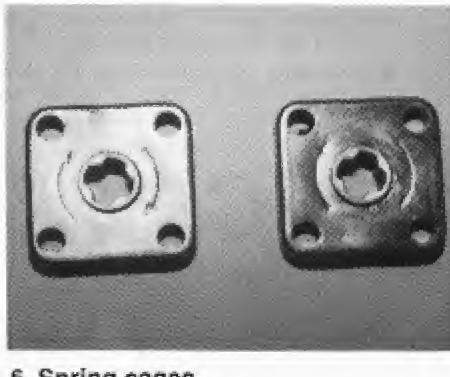
2. ...turn it in either direction...



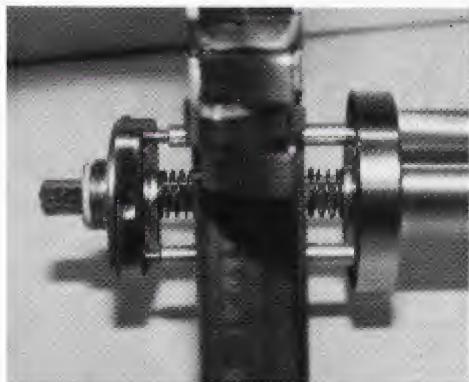
5. ...and place it into the other side of the lock case.



3. ...and replace it.



6. Spring cages.

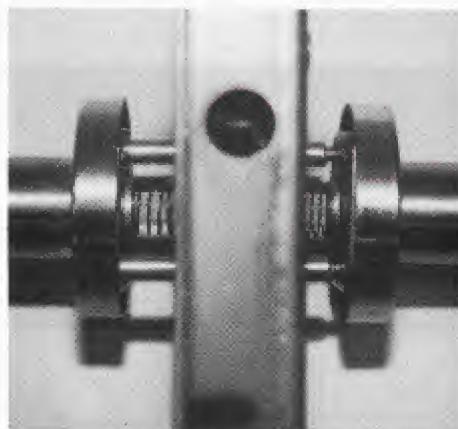


7. The spindles pass through the center of the spring cages.

completely installed, the cages are hidden beneath the roses. (*See photograph 8.*)

While there is usually little need to open a Schlage L mortise lock case, let's examine some of the internals to see how Schlage has accomplished some of the above features.

Four screws were removed in order to remove the case cover. (*See photograph 9.*) Noticed immediately is the design difference in the Schlage components. Most of the mortise locks that we have examined use two hubs, one locking and one non-

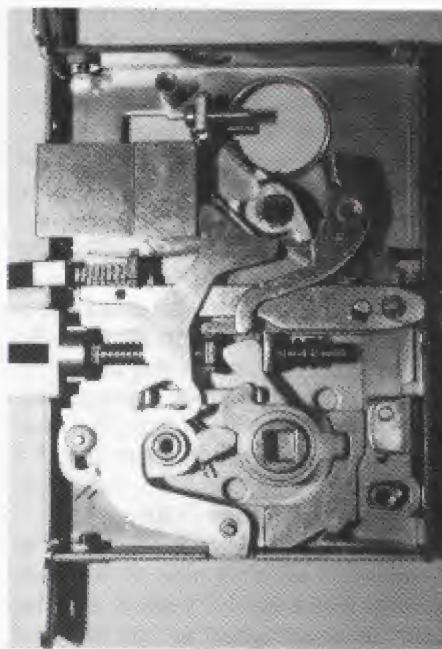


8. When assembled, the cages are hidden by the roses.



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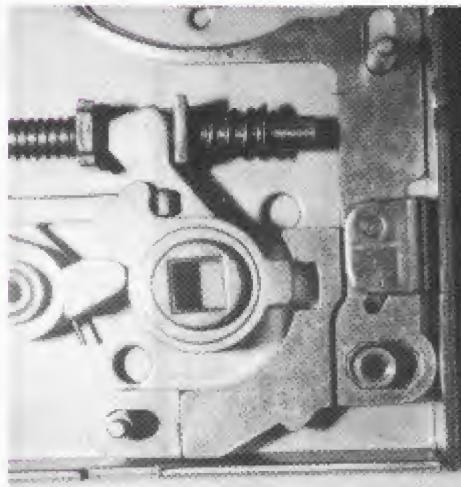


9. Inside the L9000 mortise lock.

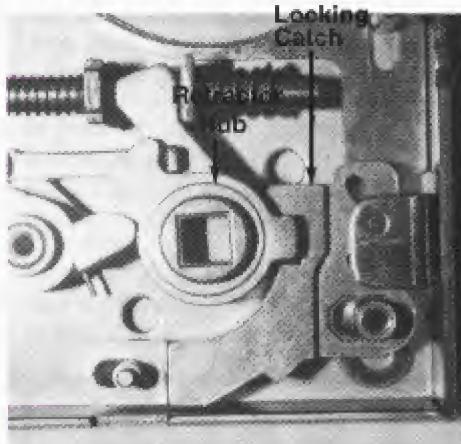
locking. To lock the unit, a slide stop (or button tail) is pushed towards the hubs, sliding into a slot on the locking hub.

In the Schlage unit, locking is accomplished by the moving of the locking catch into the retractor hubs. Large nubs on the retractor hubs seat into a ward on the locking catch, preventing the hub from rotating. (*See photographs 10 and 11.*)

In the beginning of this article you may recall that one of the nice features of Schlage is that the locking side of the unit can be changed by moving a screw from one side of the case to the other. This is accomplished by the moving of the locking catch. As seen in illustration 12, the width of the locking catch is not enough to cover the nubs of both hubs at the same time. As the catch screw is placed into the case, it forces



10. The locking catch and retractor hubs in the unlocked position...



11. ...and in the locked position.

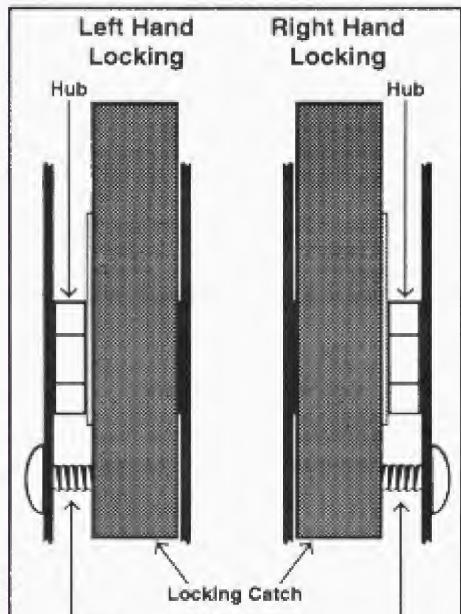


Illustration 12

A rear view of the locking latch and retractor hubs. The locking latch can only affect one hub at a time. The catch screw moves the locking catch into the proper position for the correct handing of the lock.

the locking catch to the opposite side of the case allowing it to align with the hub on that side only. Changing the side that the catch screw is inserted into the case, changes the hub that is affected by the locking catch.

The movement of the locking catch into the locking position is affected by the up and down movement of the locking link. The locking link is moved either up or down by the turn hub, or the entrance hub and cam follower, depending on the lock function. The turn/entrance hubs are moved by the pawl on a mortise lock cylinder or a thumbturn.

Also unique to the Schlage unit is the connection between the components that drive the latch, the hubs, and the fire door catch (i.e. fire stop lever).

As seen in photograph 13 there are a great number of pieces involved in just this portion of the lock, all of them interconnected.

As seen the hubs in this lock are identical. And, unlike other mortise locks, are not directly engaged with the retraction of the latch. (See photograph 14.) Instead, the hubs pull on the "I" shaped piece called the retractor link. One end of the

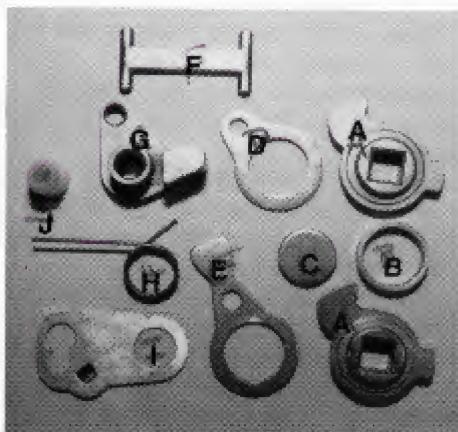


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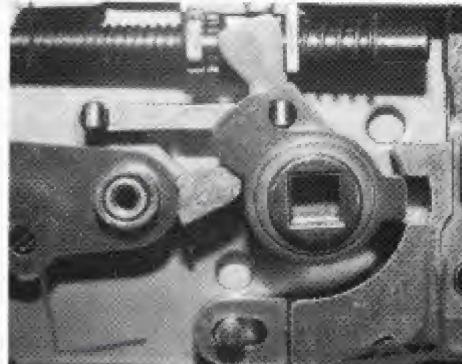
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13. A= Retractor hub; B=Retractor hub spacer; C= Blocking plate; D= Retractor rocker; E= Retractor lever; F=Retractor link; G= Retractor crank; H=Hub spring; I=Fire door catch; J= Fire door fuse.

retractor link passes through holes found in the retractor rocker and the retractor lever (both found between the hubs) and then seat on a doglegged portion of the hubs. (See illustration 15.)

The other end of the retractor link seats in a hole on the retractor crank. In turn, the retractor crank holds the



14. The hubs do not directly retract the latch. This is done exclusively by the retractor lever.

hub spring and the fire door catch. (See photograph 16.)

Now, in the unlocked position, when a hub is turned so that the doglegged portion moves up and toward the back of the case, the retractor link is pulled towards the back of the case. This, in turn, pulls the retractor lever towards the back of the case, causing the latch to retract.

When the hub is turned so that the doglegged portion moves down and towards the front of the case, the doglegged portion hits against the retractor crank. This, in turn, forces

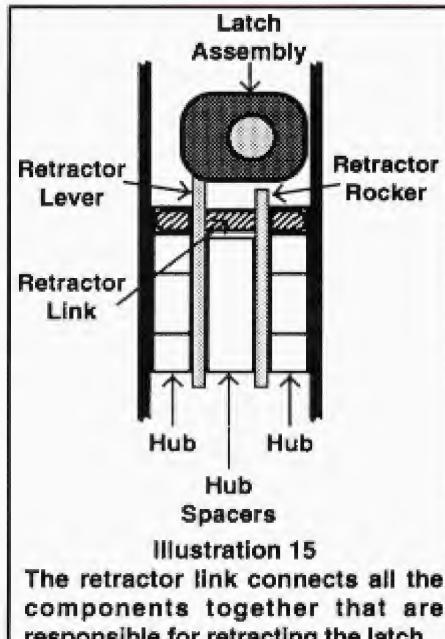


Illustration 15

The retractor link connects all the components together that are responsible for retracting the latch.

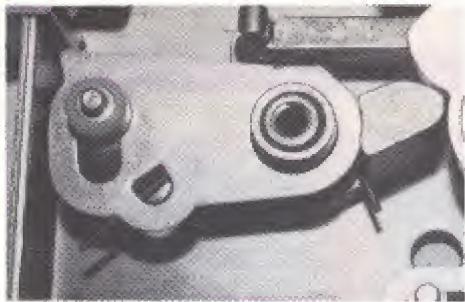
the retractor link towards the back of the case; moving the attached retractor lever towards the back of the case, retracting the latch. (Confusing?)

Now, look at the fire door catch. (See photograph 16 again.) This unit pivots on the retractor crank and is



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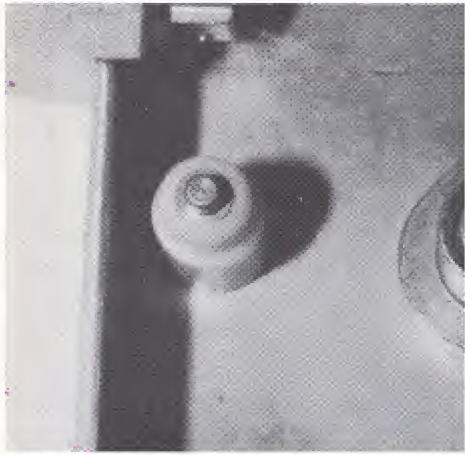
16. The fire door catch.

attached to the hub spring. The hub spring applies pressure on both the retractor crank and the fire door catch.

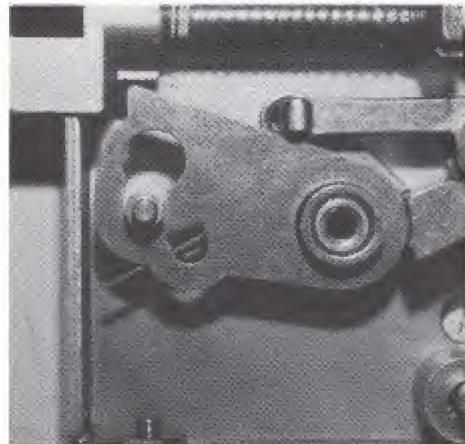
The pressure applied against the retractor crank returns the hubs to the home position after they have been turned. The pressure applied to the fire door catch forces the lever up should it be activated during a fire.

This lever, like the fire stop levers in other locks, prevent the latch from being retracted should debris fall on the levers in a fire that exceeds 700° F.

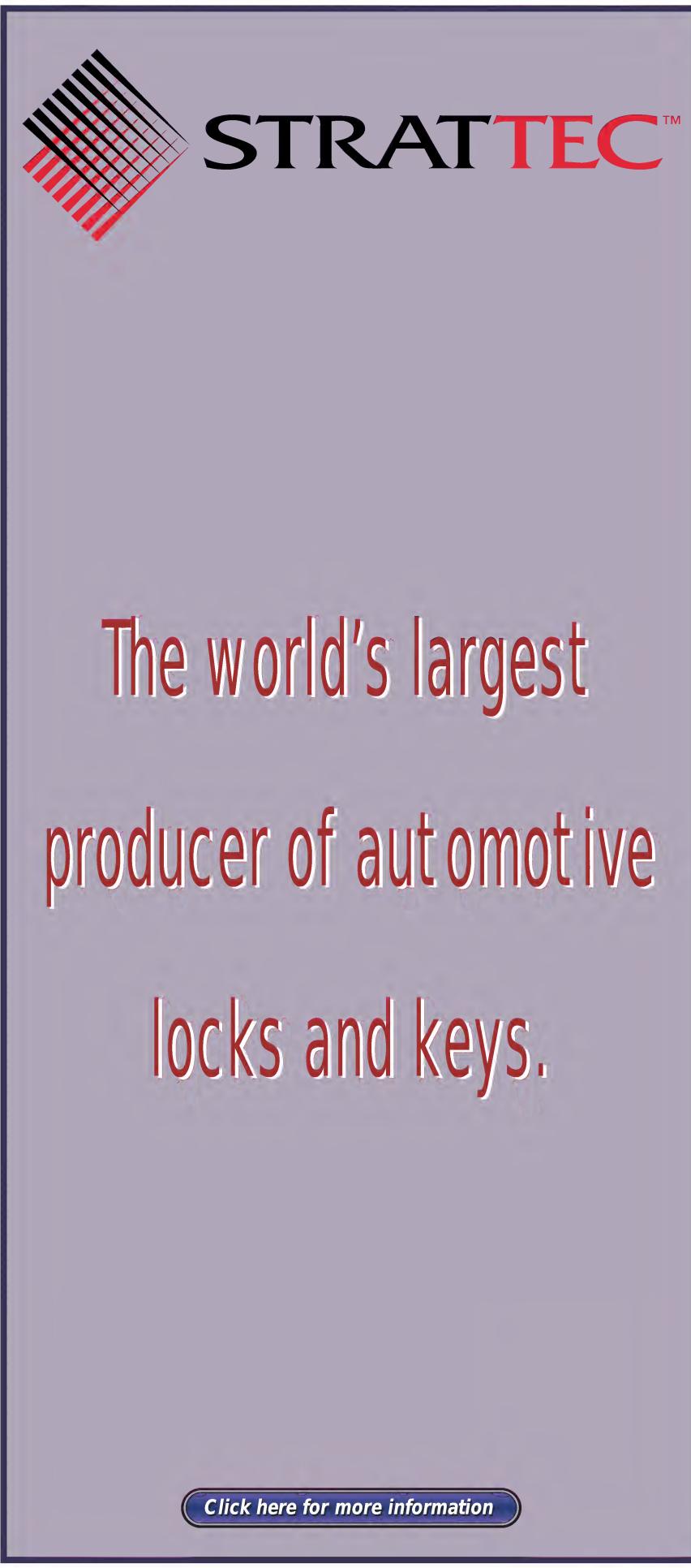
Photograph 17 shows the small plastic sleeve called the fire door fuse. During a fire this piece melts allowing the fire catch lever to be forced up by the hub spring, blocking the retraction of the latch. (See photograph 18.) §



17. The fire door fuse.



18. The fire door catch blocking latch retraction.



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Test Article #14
Automotive
Security

To be tested in June 1993 issue.
Details in insert in front of issue.

Honda ignition service covers the last in this series. While Honda has been using the push button retainer style ignition since 1982, there are four variations in cylinder disassembly. In three of the four, the plug is pulled out from the front of the cylinder, while one version has the plug removed from the back of the cylinder. Cylinders using the 3001-4482 series code and the X181 keyway use Auto Security Product keying kits A19-101 with tumblers and springs or A19-103 which includes tumblers, springs and other cylinder parts.

Cylinders using the 5001-8442 code series and the X182 keyway use ASP kit A19-104.

Honda Ignition Service

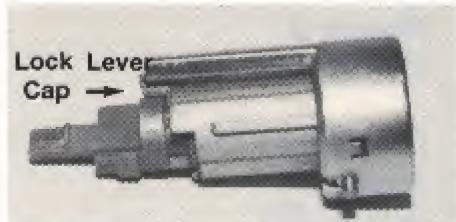
"This article is part of our Security Certificate Program. In a future issue, the content will be tested."

Kits providing springs and tumblers for both series cylinders include ASP's A19-100 and All-Lock's A6600.

Ignition cylinder replacements are available from both ASP and All-Lock. Catalogs and application information are available from their respective distributors.

The oldest versions have the retaining button near the front of the cylinder and have the plug removed from the rear of the cylinder. (See photograph 1.)

To begin service on this style ignition it is necessary to first remove the steering wheel lock lever cover, lock lever, lock lever spring and ball



1. ASP C19-108 ignition has the plug removed from the rear.

bearing.

Carefully bend the back of the lever cover up to release the spring and ball bearing. If done gently, this piece can be used again. (See photograph 2.)

Remove the spring and ball bearing, being careful not to lose the



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Lift Cover
Back ↓



2. Bend back of cover up to gain access to the spring and ball bearing. (See photograph 3.)



3. Remove spring and ball bearing.

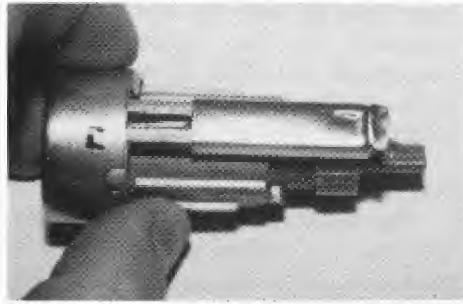
A small tab on the top of the cover holds it in place. Using a pick or similar instrument, push the tab up (see photograph 4). Then slide the

Cover retaining
tab ↓



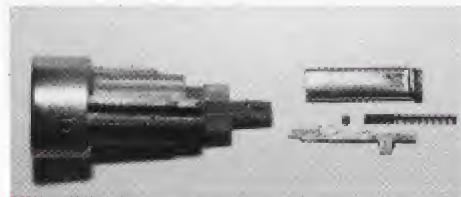
4. Lift the small retaining tab to release the cover from the cylinder.

cover back off of the lock (see photograph 5). This allows the lock



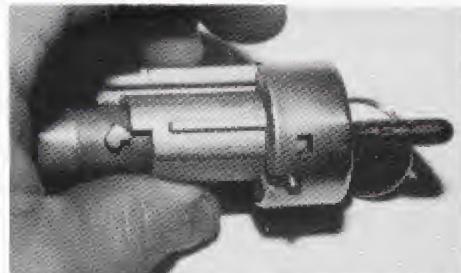
5. Slide the cover off.

lever to be removed from the lock cylinder. (See photograph 6.)

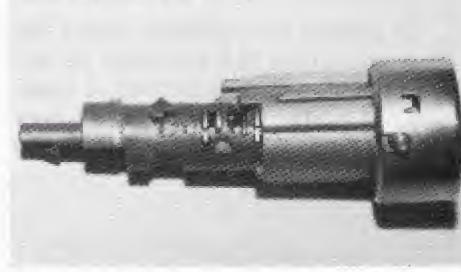


6. The cover, lever, spring and ball bearing removed.

Next, insert a key, pick or shim the lock. Turn the plug 180°. At this point the tumblers align with the tumbler ward and the key can be removed and the tumblers will fall into the ward (see photograph 7). At this point the plug can be pushed out the back of the lock and serviced (see photograph 8 and 9).



7. Turn the plug 180 degrees to remove the plug.

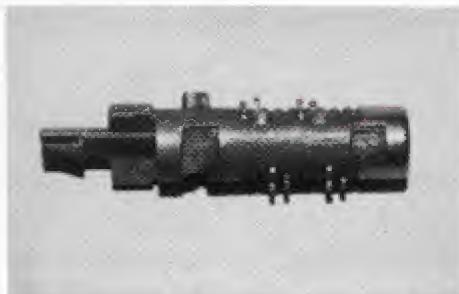


8. Plug pulled from rear of cylinder.



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9. The ignition houses 8 wafer tumblers.

To rebuild the cylinder, insert the plug back into the cylinder in the same position it was removed. A small lever inside the cylinder (*see photograph 10*) does not allow the



12. Place the lock lever, ball bearing and spring back into position.

photograph 12).

Bend the lock lever cover back into place and slide back into position on the cylinder (*see photograph 13*).



13. After bending the back of the cover into place, slide it back into position on the cylinder.

The next style ignition has the retaining button to the back of the lock and the plug is removed from the front of the cylinder (*see photograph 14*).



14. The ASP C19-110 is typical of later ignitions with the retainer towards the rear of the cylinder.

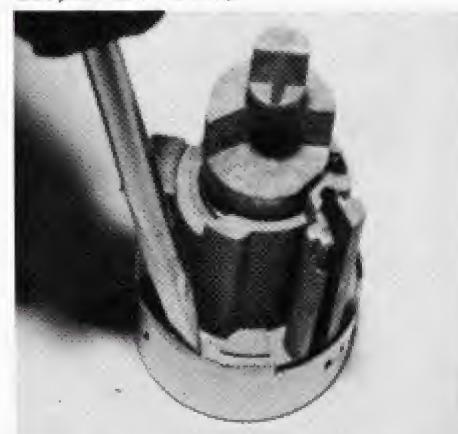
Remove the steering wheel lock lever cover, lever, spring and bearing as shown previously (*see photograph 15*).



15. Remove the cover, lever, spring and bearing.

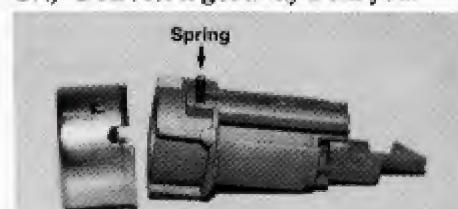
Gently pry the back of the facecap up at the back of the lock (*see photograph 16*). If done carefully, the facecap can be reused. *ASP ignition facecap P19-631 is a replacement for*

the Civic (1988-1989) ignition of this type (ASP replacement cylinder C19-110, All-Lock 1496).



16. Gently pry up the facecap.

Remove the facecap slowly, a spring is located just below the cover near the front of the lock, next to the lock lever channel. (*See photograph 17*.) Don't let it get away from you!



17. When removing the facecap, be careful not to lose the spring found just below and near the front.

Remove the spring and the lever below it (*see photograph 18*).



18. Remove the spring and lever that control the buzzer activator and lock lever.

Insert a key, pick or shim the lock. Turn the plug so that the small protrusion located on the back of the plug, lines up with the corresponding channel in the cylinder (*see photograph 19*). This allows the plug to be pushed out the front of the cylinder (*see photograph 20 and 21*).

To rebuild, reverse the disassembly procedure.

The disassembly of the next style ignition is identical to the last with exception of the facecap removal. (*See photograph 22*.)

Continued on page 34



11. Depressing the lever to insert the plug.

Place the steering wheel lock lever, spring and bearing into place (*see*



Continued from page 32



19. The protruding tab on the plug must align with the channel in the cylinder before it can be pulled out.



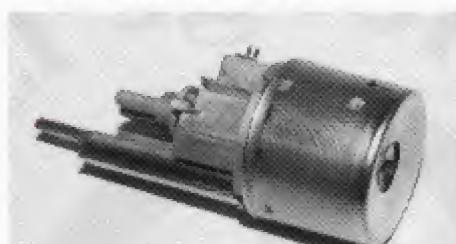
20. Pulling the plug out the front of the cylinder.

As with the last ignitions, remove the steering wheel lock lever cover, lever, spring and ball bearing (*see photograph 23*).

Then, using a pick or similar instrument, lift the three tabs that hold the facecap to the cylinder and



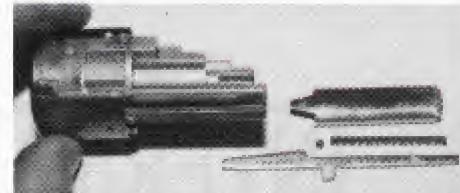
21. This plug also holds 8 wafer tumblers. Notice the difference in tumbler position, however.



22. This new Ignition is a dealer item only.

remove the facecap. These tabs are equidistant around the facecap and have a tendency to pop back into the locking position. Be patient, no replacement caps are available. (*See photograph 24*)

As with the last style ignition, a



23. As with the others, remove the cover, lever, bearing and spring.



24. Lift three tabs to release the cover. spring and lever are located underneath the facecap at the front of the lock, next to the lock lever channel. (*See photograph 25*.)

Remove the spring and lever. The lever is for the buzzer activator switch attached to the side of later model ignition cylinders. (*See photograph 26*)

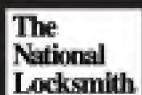
Insert a key, pick or shim the lock. Turn the plug so that the protruding tab on the back of the plug aligns with

Continued on page 36



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Continued from page 34



25. Again, watch out for a small spring found just below the cover, near the front of the cylinder.



26. Remove the spring and buzzer activator lever.

the corresponding channel in the cylinder (see photograph 27).

Push the plug out the front of the



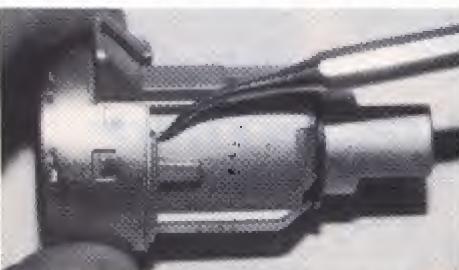
27. The tab on this plug must also align with the channel in the cylinder.



28. Pulling the cylinder out the front.



29. This plug holds 8 wafer tumblers.



30. The newest Civic Ignition has three tabs to release for facecap removal.



31. The facecap removed.

cylinder (see photograph 28 and 29).

To rebuild the lock, reverse the disassembly procedure.

The last style ignition cylinder belongs to the 1992 and 1993 Civic.

As with the last ignition style, lift the three facecap tabs to remove the facecap from the cylinder (see



32. Unlike all the other ignitions, no key is needed to remove the plug. Simply remove the snap ring and pull it out.

photograph 30 and 31).

Using a ring spreader, remove the snap ring on the back of the plug. Push the plug out the front of the cylinder (see photograph 32).

To rebuild the lock, reverse the disassembly procedure. §



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Test Article #15
Electronic
Security

To be tested in June 1993 issue.
Details in insert in front of issue.

There are two ways to power an electric lock/strike through an access control system. With some systems, the lock/strike receives its power directly from the system. In others, the lock/strike is connected to its own power source (battery, transformer, power supply, etc.) with the system in between them, serving as an on/off switch.

In the first type, when the system is activated, the lock/strike is powered directly from a relay on the control panel. This type of system is said to have an "on-board" power supply, because the power to the device is an integral part of the control system. The relay in this instance is called a "wet contact," because it has its own power. (See illustration 1.)

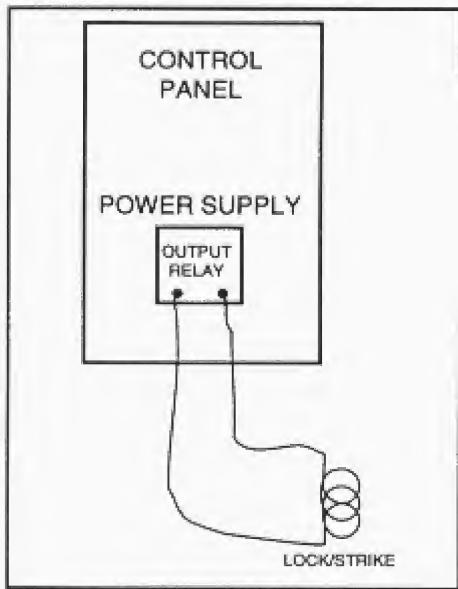


Illustration 1

Systems that provide power to the lock/strike directly from the output relay of the control panel are said to have an "onboard" power supply. The relay is called a "wet" contact because it is the source of power.

In the second type, the relay does

not have its own power, but instead acts like a switch, allowing power to flow from the power source to the lock/strike. The relay in this application is referred to as a "dry contact" because it does not have its own power. (See illustration 2.)

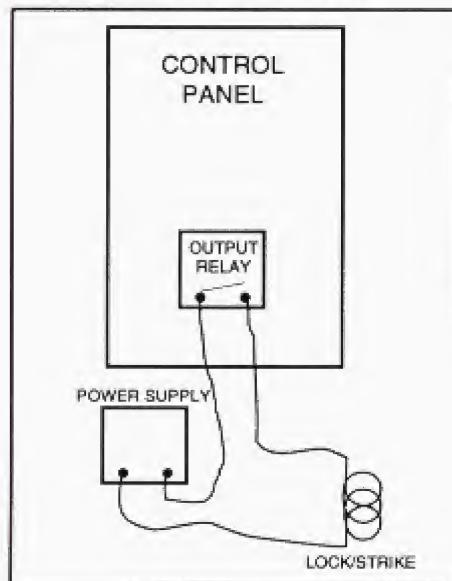


Illustration 2

In a majority of the systems, the control panel's relay simply serves as a switch between the lock/strike and the power source. In this instance, the relay is called a "dry" contact because it does not provide the power. Instead it simply conducts the power provided by the power source.

What ever method your particular system incorporates, it is important that the electrical hardware be compatible to the system, the power source and application.

When choosing electrical door hardware, there are five electrical considerations to be made. Four of them relate directly to power specifications of the lock/strike and the access control system being used, and the last to the application being made.

AC or DC

All electrical hardware is rated either AC or DC. While most access control systems allow the use of either, a wrong application may result in the malfunctioning or destruction of the hardware or system. Both circumstances can be costly and are unnecessary.

While the difference between AC and DC are covered more thoroughly in a later article, there are some points that need to be made with respect to hardware.

In its simplest terms electricity is the moving of electrons. Electrons are small particles that orbit or circle around an atom. Each of these electrons has a negative charge and their only goal in life is to locate a positive charge. The negative and positive are called poles, while an object that has negative and positive poles, like a battery, is said to have polarity.

When a motor is connected to a battery, the electrons flow from the negative pole of the battery, through the motor, to the positive pole of the battery. This is an example of DC, meaning "direct current." The electrons go from one point, the negative pole, to the other point, the positive pole. They flow in one direction. (See illustration 3.)



Illustration 3

In DC or direct current, all of the electrons move in one direction. Because the electrons are negative, their only goal is to find a positive pole.

In AC current, meaning "alternating current," the electrons first flow in one direction, then reverse and flow in the other direction. (See illustration 4.) This type of electrical flow is more typical of the household current that operates a toaster, oven, television, etc.

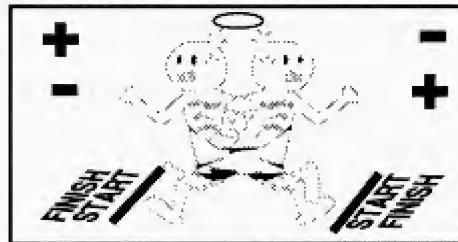


Illustration 4

In AC or alternating current, the electrons are still looking for a positive pole. However, the direction of the flow constantly changes; going first one way, then reversing and going the other. This happens 60 times per second.

What does this mean for the hardware? Almost all electrical door hardware operate by the turning on and off of a magnet. The magnet may either activate a solenoid to move a plunger (moving the part of the hardware that does the locking and unlocking), or the magnet itself may do the locking (by holding onto a large metal plate attached to the door or frame).

In either case, the magnet is formed by electrons flowing through a wire coil, creating a magnetic field. When the electron flow stops, the magnetic field stops.

In a solenoid or magnet using DC, the electrons flow from the negative pole to the positive pole of the power source (battery, power supply, transformer, etc.) creating a magnetic field. Because the flow is in one direction the polarity of the magnet is constant. The plunger or plate that the magnet is attracting is steadily seated against the magnet until the electron flow stops.

In a solenoid or magnet using AC, electrons change directions, going first one way, and then the next. This of course, also means that the positive and negative poles or polarity is also changing. Because the polarity is constantly changing, so is the magnetic field. Each time the polarity changes, the plunger or plate is first pulled, released, and then pulled again. This happens at a rate of 60 times per second. The buzzing noise heard in electric strikes is actually the

plunger hitting against the solenoid every time it is pulled and released.

How does this affect the hardware chosen?

First, an AC lock cannot be used for applications where the lock has to be energized or activated for long periods of time. If the constant buzzing doesn't drive the users crazy, the constant hitting of the plunger against the solenoid means a very short life span for the solenoid and plunger.

Second, another characteristic of AC magnets is that they typically use more power and operate hotter. If an AC lock is left to run for an extended period of time it becomes very hot and in most cases the coil burns, destroying the solenoid or magnet.

Electric locks/strikes using AC are to be used for applications where a buzzing noise is acceptable or needed (apartment entrances for instance) and where they are operated for short periods of time. While this "short" period of time varies from manufacturer to manufacturer, a period of one minute or less is generally accepted.

[NOTE: Some manufacturers have locks/strikes that are labeled "AC, silent." These units are actually DC units. A rectifier (an electrical component that turns AC to DC) is incorporated into the device. If an AC charge is applied to the lock, it is converted to DC before it gets to the device's coil.]

Locks/strikes using DC are built for either short periods of operation, called intermittent duty, or extended periods of operation, called continuous duty. Electric locks/strikes using DC are to be used for applications where noise is not required or wanted, and, when using the properly rated unit, where operation exceeds a one minute duration.

Voltages

The voltage of a lock/strike must also be compatible to the power source and the system. Voltage, in its simplest terms, is the amount of force applied on the electrons.

To illustrate, imagine a dam across a river. A small hole exists at the bottom of this dam that allows a steady stream of water to flow through. In order for the water to go through the hole, however, there must be pressure on the water, forcing it through the hole. This pressure, or force, is the water

pressure caused by the backing up of the water behind the dam. In electricity, this force is called voltage.

Now, let's say we put a water wheel on the other side of the dam, located just below the stream of water coming out of the hole. Under normal pressure, the water is forced out of the hole and onto the water wheel, causing the wheel to turn at a rate that we have labeled as normal.

What happens to the turning of the wheel as less and less pressure is applied to the water? As expected, the force of the water becomes weaker and weaker till eventually it stops. The result, of course, is that as the pressure moving the water becomes lower, the wheel turns slower, until it eventually stops.

Reversing the situation, what happens to the turning of the wheel if more and more pressure is applied to the water? That's right. As more pressure is applied to the water, the force of the water becomes stronger and stronger and the wheel moves faster and faster. If too much force is given by the water the water wheel becomes damaged.

Like this example, electrical hardware needs the right force, or voltage in order to operate correctly. If the force, or voltage is too low, the unit does not operate. If the force, or voltage, is too high, the unit may become damaged.

Most electrical hardware is low voltage, typically 12, 16.5, or 24 volt (there are some specialty high voltage applications, 48 volts and above, that require more specialized training than these articles can supply). For proper operation of the hardware, it is critical that the voltage requirements of the hardware be compatible to the system and/or power source.

Amperage

Amperage, or amps for short, is another measurement of electricity that is critical to the operation of electric hardware. While voltage tells us what amount of force is necessary to operate a device, amps tells us how much or what quantity of that force is needed.

Going back to the dam example (no pun intended), the flow of the water can be measured in gallons per minute (gal./min.). In electrical terms we measure the flow of electrons the same way, except we use units called amperes or amps.

With the water at a given pressure, the water wheel needs 100 gal./min. in

Continued on page 43



Continued from page 38

order to turn. To deliver that amount of water at that pressure, the hole in the dam has to be a certain size. For the sake of this illustration, let's say that the hole is 6 inches in diameter.

Now, let's plug that hole until it is only the size of a soda straw. What happens? The pressure on the water is the same, but it's not coming out fast enough to make the wheel operate.

At this point we can do two things to make the wheel operate: First, we can put in the correct size hole; or, second, we can apply more pressure to the water, thus raising the flow of water through the hole.

If the plug is strong enough to accept the high pressure and faster flow, the wheel may operate. More than likely, however, the increased pressure is going to break through the plug, destroying the dam.

Again, like the examples, electric hardware not only needs a certain voltage to operate correctly, it also needs a certain amount or flow of that voltage to operate correctly. Like voltage, this rating is usually listed on the piece of equipment in amps.

Unlike voltage, if the amp rating on the electric hardware is *less* than the amount listed on the power source or

relay contacts, it is alright. In fact, this is good. This means that the relay and power source can supply more flow than the device needs. The device only takes what it needs.

On the other hand, if the amp rating of the hardware is *more* than the amount listed on the power source or relay contacts, damage may occur to the power source or relay contacts. The device is asking for a flow of electrons bigger than the relay contacts and/or power source can handle. And, like the plug in the dam, they will be destroyed.

Therefore, it is important to make sure that the amperage requirement of the electrical device is *equal to or less than* the *maximum* ratings of the power source and system relay.

For example, the dry contact ratings on Corby's access control systems are rated 30 volts at 5 amps. This is usually well within the requirements of most electric devices.

A transformer is generally an AC power source that can be rectified to DC. A transformer is typically rated by the output voltage and VA or volt-amps. The amperage rating for the transformer can be calculated by dividing the VA (volt-amps) by the

output voltage.

For instance, a typical transformer is rated at 24 VAC (volts in AC) and 40 VA (volt-amps). Dividing the VA, or 40, by the VAC, or 24, tells us the transformer can handle up to 1.67 amps at 24 volts. If the output is 12 VAC and 40 VA, we divide 40 by 12 and find that the transformer can give us 3.33 amps at 12 volts.

Do not be too confused by these numbers and formulas. They are simply here as an example. The important issue is to understand that electrical door hardware have properties distinct to the power requirements of the device. In light of these properties, it is important to identify the application requirements and parameters before choosing the hardware. Future issues cover basic electrical theory.

Duty-Intermittent or Continuous

Another rating given to electrical devices is intermittent or continuous.

An intermittent rated device can operate for only short periods of time before the coil overheats and burns. Devices of this sort come in both AC and DC.

A continuous rated device can be powered for indefinite amounts of

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time without accruing damage. As stated earlier only DC strikes can operate with this rating.

Some manufacturers specify that they have an AC continuous duty lock/strike. This designation, like the AC silent, is misleading. Like the AC silent device, a DC coil is used and a rectifier is added to the unit in order to convert the AC to DC.

As a general guideline, anytime an application requires that the lock be energized for more one minute intervals, use a continuous duty device. Remember that these continuous duty devices are always both DC and silent. If a noise needs to be emitted while using a continuous duty device, an additional piezo sounding device may have to be added.

Also, remember, that AC devices only come in intermittent duty ratings and have a buzzing sound. DC intermittent duty strikes are available and make no noise.

Fail Safe - Fail Secure

While more of a physical trait than an electrical, all electrical locks/strikes have a fail safe or fail secure designation. This designation is probably the cause of more confusion among beginning locksmiths than any other with respect to hardware.

The rule for determining whether a unit is fail safe (called reverse action by some manufacturers) or fail secure (called non-fail safe by some manufacturers) is simple. What is the condition of the lock/strike *without power?*

A fail safe unit without power is unlocked.

A fail secure unit without power is locked.

Applications? The most common function by far is the fail secure unit. Most applications require that the door be locked should there be a power failure. In most instances these units can be intermittent duty because they are only powered when the door needs to be open.

Fail safe, on the other hand, should be used where there is a need to unlock a door should power fail. The most common use is for areas or doors that must become unlocked in a fire situation. The locks are tied into the fire system. When the fire system goes into the alarm mode, the relay that the unit is tied into cuts off all power to the strike, allowing the door to open. The fail safe lock generally is continuous duty because they are

powered up for long periods of time to keep doors locked.

This covers the important electrical properties of electrical hardware. Before purchasing any hardware, make sure that it meets the application of the job and specifications of the control system and power source.

Before making the purchase ask yourself these questions:

Do I need AC or DC?

What voltage do I need?

How many amps does the device need, and does this exceed the amperage the control panel and power source can deliver?

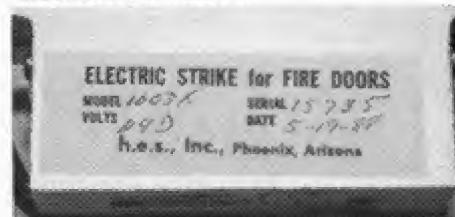
Does it need to be intermittent or continuous duty?

Does it need to be fail safe or fail secure?

(See photographs 5, 6, and 7.)



5. Manufacturers use different methods of showing the ratings and electrical requirements of their electrical hardware.



6. Sometimes, not all of the information you need is shown and it is necessary to confirm the ratings with the distributor or manufacturer.



7. Other times, the ratings are displayed in different units and must be transposed to show us the ratings we are looking for. This is most common on devices with diverse ratings. These units generally accept a range of voltages and amperage.

Next month we will cover the physical properties of electric door hardware. §



The National
Locksmith

Mini Section...

Safes

Here in this section is a look at a variety of different safe related products and companies. Do you profit from safes?

American Lock & Supply

Safe servicing is an important and profitable part of many of our businesses. And, like any part of the locksmith business, we are often called upon to service a customer now! Often times, however, we find a need for either parts or technical information. And, depending on the safe, this may mean referencing for parts or information through manuals or placing phone calls to various sources looking for everything needed. All of it time consuming, and, sometimes, frustrating.

To help the locksmith/safeman in this effort, American Lock & Supply, in a cooperative effort with Sargent & Greenleaf, has recently opened the S&G Product Center. This center is basically a one stop (or call) source for both S&G parts and technical information.

The first part of this program gives the locksmith access to a factory trained service representative to help answer questions regarding S&G products and the availability of products. This helps short cut any unnecessary research concerning their product.

The second part of the program is having the parts in stock. Before becoming operational, American and S&G took six months researching the needs of the locksmiths American serves. The result is an inventory based on that research and recommendations from S&G. The parts most often needed, and some not so needed, are always kept in stock.

Finally, the last part of the program is delivering the parts. Knowing your customer can't wait, American is offering Next Day, 2-Day and Saturday deliveries, via UPS or

Federal Express, anywhere nationwide.

The S&G Product Center from American Lock & Supply is truly a program centered around the needs of the locksmith/safeman. With a simple phone call they can receive not only the technical support to complete a job, but also the availability and speed in delivering parts to keep customers happy.

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Fire King International, Inc.

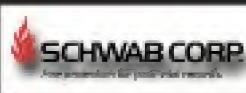
Meilink, a division of Fire King International, Inc., has reduced prices and expanded their record safe product line.

In an effort to help the dealers and wholesalers compete with the off shore competition, Meilink has reduced the prices on their commercial record safes

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and data safes. In addition, Meilink has added three new models to the premium record safe line: 2021-2, 3115-2 and 3121-2. All of these safes are U.L. Class 350-2 hour insulated record safe (Class "B") rating with impact. They feature, drill-resistive, case-hardened steel plate protecting the combination lock, five active 3/4" locking bolts, U.L. listed GroupII, S&G three tumbler, key changeable combination lock, plus key operated day lock and a U.L. relocking device.

Moreover, Meilink has added another model to their Gibralter Composite safe series, the KC 7233F21D. This new product offers protection, as does all the Gibralter Safes, against both theft and fire.

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NATIONAL AUTO LOCK SERVICE, INC.

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Fort Knox

Fort Knox Security Products is always coming up with innovation and constant improvement. Their 1993 models will offer a variety of new features, namely their special Bolt Guard™. This angled steel bar protects the locking bolts from any possible defeat. In addition to Bolt Guard, they have designed a hard plate with steel ball bearings mounted in critical areas to protect the locking mechanism against any drilling. With high standard of technology, Fort Knox now carries the UL listing for residential security containers and gun safes. This means that all of the Fort Knox safes have passed the rigorous testing that Underwriters Laboratory puts them through.

Along with standard features they offer a long line of options. The fire protection package has been tested and certified with temperatures exceeding 1200 degrees, while keeping the inside of the safe under 350 degrees. They can also personalize your safe with your name, family trust or hand painted mural for a custom, one-of-a-kind investment. This year brings more technology with the digital electronic lock that makes entering your combination as easy as dialing your phone number. However, if four wrong codes are entered, it will automatically deactivate for about 15 minutes. The new fluorescent lighting package will completely light up the interior of your safe. They also offer an elegant plush velour interior to accommodate your preference.

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Frontier Safe Co.

Frontier Safe Co. of Fort Wayne, IN manufactures various models of gun safes including their new Pioneer line and their most popular model, the SR-Series.

The SR-Series features 10-gauge steel walls, 1/4-inch plate reinforced, recessed doors, eight active 3/4-inch bolts and adjustable ball bearing hinges. All SR-Series safes are equipped with Sargent & Greenleaf combination locks and Spyproof Rings. Doors with spinner handles are available as an option.

All Frontier safes are manufactured with heavy steel and equipped with accessories that are of the highest quality available. All models are constructed of laminated steel and hard plates of up to 11/16 of an inch thick to protect critical areas such as the lock and cam mechanism. All doors are built with reinforced jambs to thwart break-ins and adjustable ball-bearing hinges so that all doors open smoothly and quietly.

S & G key locks (for easy installation into combination dials) and electronic locks are available as options.

Frontier safes have no dummy bolts. All bolts (up to 14) move in and out with the movement of the handle. For



maximum security, the handles have a shear pin inside the door which, under force, will disengage the handle from the locking mechanism. The cam is held in place by a special machined shaft to prevent forced entry.

Safe exteriors are coated with a synthetic enamel paint, providing a beautiful rich finish. Standard models come in solid or two-tone brown. Optional colors include deep black and an array of metallic finishes including burgundy, velvety blue, and dark oak. The interiors are lined with carpeting on all three sides, the floor and shelves. The extensive use of standard carpeting creates a cozy, dry environment for guns and valuables.

**For FREE Information
Circle 444 on Rapid Reply**

Gardall Safe Corporation

Gardall Safe Corporation is pleased to announce several additions to its growing family of security products. New Gardall products result from the many requests and inquiries received from both locksmith dealers and end users.

To begin, Gardall has added five new floor safes to their existing product line. These latest arrivals round out the floor safe line by offering two low cost tube safes and three commercial grade units. Models G500 and G700 are reasonably priced without reducing the quality or features that are offered. Both models are

eight inches square with lift out heads and eight inch or twelve inch inside depth. Models G1500, G2200, and G3600 are available with either a "B" rated or "C" rated door. All five models feature: Group II UL listed combination lock, hardplate protecting the lock, a locking bar to prevent removal of the door in the event the hinges are attacked and an independent relocking device. Further, all five models are available with a baffled drop slot in the door for a modest additional charge.

Secondly, Gardall has improved its concealed wall safe, Models SL4000 and SL6000 adding a 1" flange around the face of the safe. The flange makes mounting easier and helps guarantee a professional looking installation.

Finally, for those dealers seeking an economical way to provide their customers with a safe that has a depository and can also store cash register trays. Gardall now offers a multi purpose safe with either a rotary hopper (RC2522) or front loading depository (FL2522) with an interior featuring a key locking compartment to store deposits and adjustable shelving capable of holding up to five cash register trays.

**For FREE Information
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HPC, Inc.

Most locksmiths are aware of the wide variety of locksmithing products that HPC

manufactures such as: key machines, key cabinets, code books, manuals, car openers, picksets and locksmithing tools. Something that many locksmiths may not be aware of is that HPC manufactures an economical line of wall safes.

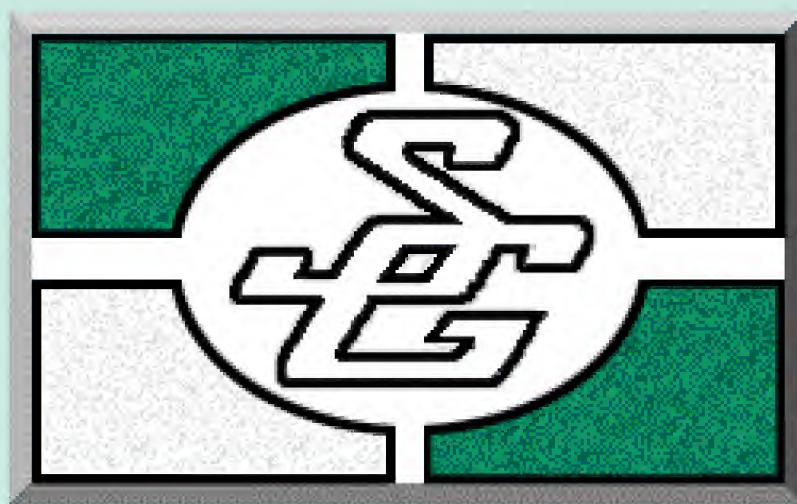
HPC wall safes are available in two sizes with a choice of locks. The Small Wall Safe has two inner containers for storing small items such as jewelry.

Both safes are designed so that they will fit easily between two vertical studs with centers 16 inches apart. One unique feature that allows the safes to be unobtrusive is HPC's innovative flush hinge; this feature enables the safe to lay practically in line with the wall. Once installed, both safes protrude only 1/16" from the surface of the wall.

The standard lock for these safes is a tubular lock. They are also available with a Medeco® keyed lock or a combination lock. The Medeco® lock provides a high level of security against picking and drilling of the lock. The combination lock is a Group II hand change type. It comes complete with a black dial and chrome spyproof dial ring.

The wall safes are constructed of heavy gauge steel. Plus, all locking and hinge points are dual reinforced steel. They are painted with a two-step texture epoxy painting process in a neutral sand color, enabling them to be easily concealed.

Continued on page 96



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Padlock Product Review Section:

Abus Features

Diskus Padlocks

The "Abus-Plus" Diskus disc cylinder technology featured in these quality padlocks provides maximum security for both indoor and outdoor applications. The unique concealed shackle design and the hardened steel anti-drill cover protects the cylinder against picking.

The Abus-Plus Disk cylinder makes possible over 30,000 key changes.



Circle 376 on Rapid Reply

Almont Lock Re-Keyables

Almont Lock Company's padlock design allow for fast and easy repinning of the padlocks. With their newly redesigned wire retaining tool it's easier to rekey their padlocks. For master keying or for keying into an existing key systems, simply notch a key and insert the wire to change pins or shackles.

Another plus is the lock is built with a body made from solid bar brass and the shackles made either or hardened steel or solid brass.



Circle 377 on Rapid Reply

American Lock's Display

The "Key Advantage" display from American Lock offers an easy-to-understand demonstration of the company's popular Key Advantage Program®.

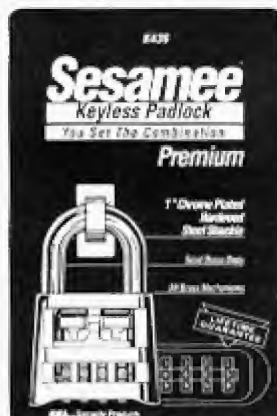
The countertop display, available alone or fully stocked with merchandise, lets customers understand the benefits and having just one key that opens all their doors and padlocks.



Circle 378 on Rapid Reply

CCL'S Sesamee Cut-Away Display

CCL Security Products offers the PCW-400 Sesamee cut-away display. This display is an easel back, self standing, counter top display which is the same size as the current Sesamee padlock functional cut-away K436 Sesamee padlock. No parts have been omitted in the cut-away padlock. Therefore, it may be demonstrated in the same manner as any standard production Sesamee padlock.



Circle 379 on Rapid Reply

Eng. Unlimited's Padlocks

Engineering Unlimited, Inc., manufactures a line of rotary shackle type padlocks for a variety of industrial security application. Unique to the lock industry the shackle has to be completely rotated to open. The locking mechanism prevents rotation of the shackle and unlike most other locks, is subject to no internal or external forces in the closed position.

Available in three models with over 1,000 key combinations the shackle diameter sizes are 5/16" or 1/4".



Circle 380 on Rapid Reply

Hercules Offers Brass Pin Tumblers

Hercules Industries manufactures a complete line of solid brass tumbler pin padlocks to serve the needs of business, industry and agriculture. Their locks are precision crafted out of solid brass to withstand all weather conditions and are available with brass or hardened plated steel shackles in a variety of clearances.

Accessories include keyblanks, cut keys, and brass chain.



Circle 381 on Rapid Reply

Master Lock's Pro Series™

Master Lock introduces a line of padlocks designed specifically for industrial and commercial use. The Pro Series™ line of seven rekeyable, commercial padlocks offers the features most requested by users: high security and weather resistance.

Master Pro Series padlocks have high-security features including: shackles of extra tough, hardened Boron alloy steel, dual steel ball-bearing locking, solid iron shackle shrouds, and cylinders with special spool pins that make padlocks almost pick-proof.

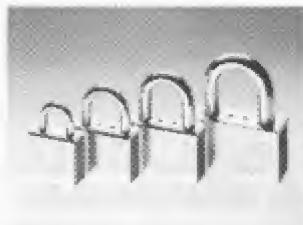


Circle 382 on Rapid Reply

Mul-T-Lock's High Security

Mul-T-Lock® padlocks are manufactured using the same telescopic pin tumbler mechanism found in their high security cylinders. These hardened body padlocks are designed to resist picking, drilling, sawing and bolt cutting. They are available in four sizes with three different shackle lengths to meet almost any demand.

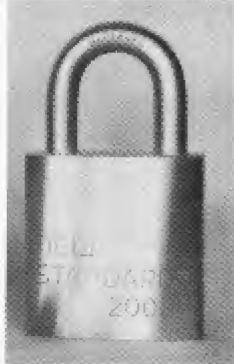
Other available accessories include body mounted shackle protectors and unique weldable cast iron hasps which provide total protection against vandalism.



Circle 383 on Rapid Reply

New Standard Expands Line

New Standard Manufacturing Company announces an expanded padlock and shackle line. Available in 1 3/4" and 2" body widths, specific models accept Schlage type original and after market knob cylinders, Sargent and Arrow knob cylinders, Russwin and Yale knob cylinders. Best type IC, Russwin-Corbin IC, Medeco IC, and Sargent IC cylinders. All models are available with the new patented NKR-CV dual-function mechanism.



Circle 384 on Rapid Reply

Environmental S&G Padlocks

The Environmental Padlock from Sargent & Greenleaf has been designed to resist both physical attack and harsh environments, combining security against forced entry with reliable performance even after years of exposure to dirt, moisture and freezing.

Instead of pins and springs that can stick, rust, break or fail in adverse environments, S&G's Environmental Padlock has a unique disk and spacer design that allows the key cylinder to clean itself with each use, ensuring that the lock will open quickly and easily when the key is turned.

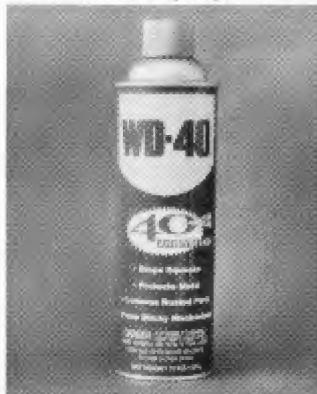


Circle 385 on Rapid Reply

WD-40 Offers Bonus Ounces

WD-40, the popular lubricant, penetrant, rust preventative, moisture displacer and cleaner that is celebrating its 40th anniversary this year, will offer bonus ounces in special commemorative cans starting in March.

The product, which is found in 79 percent of American households, will carry a special "25 percent more free" wrap, which when removed, reveals a stylish 40th anniversary logo.



Circle 386 on Rapid Reply

Wilson Bohannan's Top Brass®

Top Brass® is the new all American, all brass, all rustproof padlock by Wilson Bohannan Company.

Introduced to the retail trade in 1992, Top Brass® padlocks are available in eight models and sizes. Totally rustproof inside and out, they offer a choice of brass or stainless steel shackles and provide maximum security inside or outside, rain or shine, year in, year out.



Circle 387 on Rapid Reply



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Abus Granit Padlock

Abus Granit maximum security padlocks provide a new dimension in padlock technology. The 36/55 model derives much of its strength from special steel alloy body and shackle. It is tested to withstand a 9,000 lb. pull test and operates smoothly at -40 degree Fahrenheit.

The Granit 36/55 has a cylinder with an anti-drill shield which makes it pick and drill resistant.



Circle 388 on Rapid Reply

American Lock's Weatherbuilt Plus™

Weatherbuilt Plus™ padlocks from American Lock provide maximum security for gates, boats, sheds, trucks, and all outdoor applications.

Weatherbuilt Plus solid body padlocks are protected from road, grime, dirt and freezing by a Shell Kration® cover that resists acid, oil and gas. The cover stays pliable in both extreme hot and cold conditions.

Accessories are available for securing trailers, spare tires, ladders, car racks, and more.



Circle 389 on Rapid Reply

CCL's Huski Rekeyable Padlocks

CCL Security Products offers an economical line of disc tumbler padlocks with an easily interchangeable plug that may be quickly rekeyed. The Huski padlock is supplied with a 1-1/2" wide pressure cast body. The body is finished in a textured gold epoxy finish.

The Huski padlock may be ordered in 3/4", 1-1/4", 2-3/4" or 5" shackle clearance.



Circle 390 on Rapid Reply

Master Lock's Safety System

To assist companies in meeting OSHA rules, Master Lock offers its Safety Lockout System. This system helps safeguard work teams against accidental injury and preserves equipment from damage.

The No. 420 and No. 421 Lockouts secure switches and valves in a neutral or "off" position during maintenance, until all team members are clear of danger. Up to six personal padlocks can be applied, and every padlock must be removed before the lockout can be opened to actuate the control.



Circle 391 on Rapid Reply

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by Dale Libby

Installation Tools By Major

"I love tools. Especially ones that work! I was very impressed with the tools that I tried out for this article."

I love tools, especially tools that work. There have been several locksmith specialty tools over the years that I have reviewed that really work. There are others that I have tried to use and have failed. Those are the one's that you do *not* hear about. I was very impressed with the tools that I tried for this article.

The tools in question are the HIT-1 and the HIT-2 installation tools. They are made by Major Manufacturing Inc. of Anaheim, California. As with any exclusive installation tool or rig, a specific tool for a specific job is always best. When an all encompassing tool is made, it may sacrifice some little benefit to be "Universal."

For years, I have used a door installation drill rig. This ensures that all the holes I drill are at right angles to the door and at the proper backset from the edge of the door. I have modified this rig to hold spacers for odd sizes of holesaws. The basic holes are 2-1/8". I have spacers that fit inside of this rig for 1-7/8" and 1-1/2" holes.

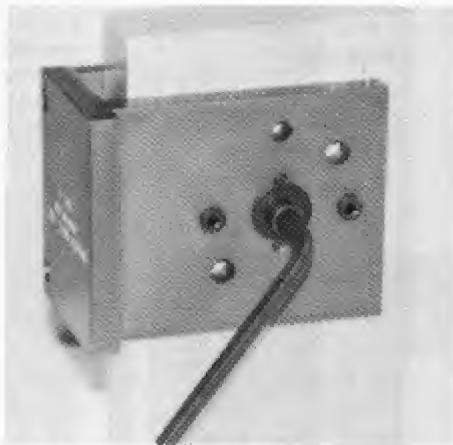
You do not need a drill rig or fixture to install a deadbolt on a door where no holes have been previously drilled incorrectly. If you are called on to install a deadbolt or door knob that needs a larger hole over an existing hole, there is no better way to do it than to use a drill rig to clamp over the undersized hole to drill a larger hole.

There have been many "tips" on how to do this without a rig. The best way to do this, however, is to get the proper tool for the job. This is where the HIT or Hardware Installation Tools become very practical.

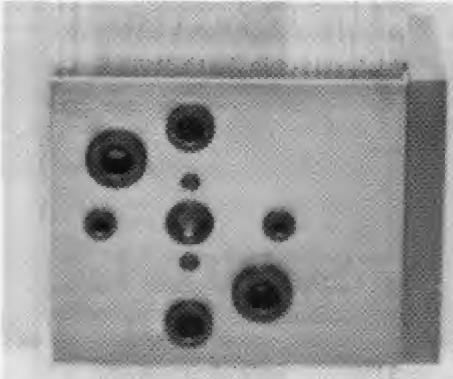
With the new Handicap Access Laws, the locksmith will now have to install lever locks on public access doors whenever upgrading hardware. The HIT tools are made to work on grade 1 lever locks made by Schlage, Assa, Sargent, and Arrow. These locks require extra holes to be drilled in the door for proper working and alignment of the new lever locks. These locks also require a special tool for tightening the lock to the door.

The tool for installing and aligning these locks is simplicity itself. The HIT-1 takes about 30 seconds to position on the door. The door must be drilled with a standard cross bore (2-1/8") hole for leverset and a 2-3/4" backset. There is a slight difference for the Schlage lock and the Arrow, Sargent, and the Assa locks. I will mention both procedures briefly. (*See photographs 1 and 2.*) This procedure comes from the HIT-1 directions:

Schlage Rhodes: Remove the Allen bolt and backplate. Place the HIT-1 guide on the door with the aligning washer in the 2-1/8" crossbore. Replace the backplate and tighten the Allen bolt until



1. Installing the self-aligning Hardware Installation Tool on a lock mount.



2. HIT-1 properly installed. Bushings on front. Only drill on bushing side. snug. Do not over-tighten. With a 5/16" bit, use the drill guides located at 12 and



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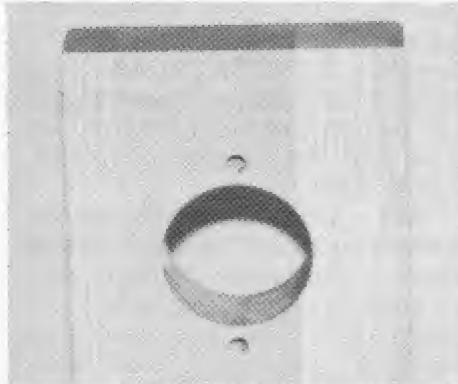


The
National
Locksmith

6 o'clock and drill through the door. On wood doors, back out the bit while drilling to help remove chips. These holes are for the through bolt mounting studs. Change the bit to a 5/32" and drill holes in drill guides located at 3 and 9 o'clock on both sides of the door. These holes are for the anchor plate lugs and so do not need to be over 3/16" deep. Failure to add these holes will cause the levers to bind. Remove the guide from the door and install the lock. Check for proper operation.

I like installing the Schlage Rhodes lock with this tool. It is impossible to mess up. You can clamp the tool either way on the door and the holes will all be in perfect adjustment. The only drilling you do is through the hardened black installation drill guides. In photograph one there are two guides shown, and in photograph two there are six guides shown.

Photograph three shows the almost complete drilling of the lock mount. Note the holes at 12 and 6 o'clock. All that is left is to drill the holes at 3 and 9 o'clock for the anchor studs on both sides of the mount.



3. Almost finished. I have not drilled the anchor plate yet.

Once the holes are drilled, it is time to install the Schlage Rhodes lever lock. Included with the lock, the manufacturer provides a spanner wrench and a black plastic tool that are used to tighten the lock to the door. This is quite awkward at best, but can be accomplished by using the spanner wrench and plastic tool.

A better idea is to use a HIT-2 installation wrench. (*See photograph four.*) This tool, as well as the HIT-1 is made of blue anodized aluminum. It is the perfect companion tool for the HIT-1. This tool is used on Schlage Rhodes, Assa Brooklyn, Arrow Sierra and Sargent LN locks to provided a better grip control when tightening the locking nut on the inside sleeve. This greatly decreases the installation time needed



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4. The HIT-2 installation nut driver wrench, the Schlage spanner, and the plastic installation tool.

for these locks, and is easier to boot.

To install Assa, Arrow, and Sargent grade 1 levers, extra holes are also required, and proper alignment of the HIT-I tool is needed. For Schlage, just clamp it to the door. All the holes are automatically aligned. For the others, the HIT must be installed so that the special holes are properly aligned. Again, from the HIT-I directions:

For Assa, Arrow, and Sargent:

Remove the allen bolt and backplate. Place the HIT-I guide on the door with the aligning washer in the 2-1/8" crossbore. **IMPORTANT:** Make sure the guide is mounted so that the bottom 3/8" bushing is closest to the latch side of the door. (*See photograph 2, the latch is on the right.*)

With a 3/8" bit, drill through the guides in the 10 and 5 o'clock position as shown in photograph two. Again drill the holes for the plate lugs located at 3 and 9 o'clock. They do not need to be over 3/16" deep. Failure to add these lug holes will cause the levers to bind. Check for proper operation.

Photograph five shows the end of the HIT tool that is used for Assa, Arrow, and Sargent. The other end of the tool is for Schlage Rhodes. It is a four pronged type installation tool.

Install and Prosper....

Flash Update: 3-3/4" and 5" adapters are now available for the HIT-1 tool."

For more information contact: Major Manufacturing, P.O. Box 788, Atwook, CA 92601, (714) 772-5202. §



5. A HIT-2 end for Arrow, Assa, Sargent.



NATIONAL
AUTO LOCK SERVICE, INC.



Service Vehicles...

The vehicle a locksmith drives may just be his most important tool. A locksmith vehicle must be very reliable, economical, and of course, it must be roomy enough to fit the full range of locksmith tools and equipment. Utilimaster Motor Corporation offers just such a vehicle...the Aeromate®.

The Aeromate is a front wheel drive, walk-in van which offers a good alternative to a plain cargo van. The engine is a 153 horsepower, 3.3 liter unit manufactured by Chrysler Corp. The engine and powertrain are warrantied for three years/36,000 miles. The body is constructed of hardened aluminum for durability and corrosion resistance. The body is painted with DuPont Imron® a material similar to that used on commercial aircraft. The Aeromate is available in 120 colors.

Interior cargo dimensions are six feet wide by 6 feet high, and nine feet long. The van offers 317 cubic feet of load space, placing it in a class by itself. Four wheel independent suspension, along with front MacPherson struts and rear torsion axle suspension with shock absorbers provide sure footed handling and a comfortable ride.

The twenty gallon fuel tank is shielded against road debris and stones. The van averages 17 miles per gallon, and due to its aluminum body, will never rust. The 20 inch floor height makes it easy to load and unload. And

Utilimaster's Aeromate®

"The Aeromate body cleans up well and doesn't rust. Plus the size and shape of the vehicle is excellent for a locksmith."



Van Interior designed by Adrian Steel.
the cargo capacity of one ton meets or exceeds the needs for most every locksmith.

Jim Cawby is manager of Grott The Lock Doc, a locksmith business in Lexington, KY with 19 employees. Jim manages the fleet of Aeromates because the company currently owns four. Another two are now on order.

"Before, we used to have Chevy step vans and we painted them nice. But they used to rust out, and we'd frequently have to replace the rear doors," says Jim.

"On the Aeromate, the aluminum

body cleans up real good and it does not rust. Plus the size and shape of the vehicle is excellent for the locksmith because it is very noticeable."

Jim mentions that he has found the vehicle to be reliable. "Just about everything has been covered by the warranty," he notes. He also notes that the gas mileage is good. "We get about 17 miles per gallon, which is good for a nice size truck like this. The locksmith can actually stand up in it, he doesn't have to squat. But it still gets good mileage."

Outfitting the truck for a locksmith vehicle is easy, according to Jim. "In the back of each truck we built a bench that runs from the back all the way to the front. Plus we attached shelving on the other wall. Each truck has a key machine and a grinder, plus fluorescent lighting. I think this is a good vehicle for the locksmith, especially because of the great visibility it give you. The truck is good advertising for your business because it really stands out."

Other features included standard with the Aeromate are: Front wheel drive with 4-speed automatic transmission, power steering, power brakes, tilt wheel, intermittent wipers with washers, contoured highbacked driver's seat with three point seat belt, cargo bay light, cab dome light, tinted windshield, mounted spare tire and tools, heavy duty bumpers, one-piece fiberglass hood, cup and clipboard holder.

The Aeromate may be outfitted with a variety of interior shelving and storage options available from Utilimaster. A generator option is also offered to power key machines and other electrical equipment. By arrangement with Adrian Steel, a custom, special locksmith interior is also available for the vehicle which includes a locksmith bench.

For more information or for the name of the nearest dealer, contact: UMC, P.O. Box 860 Wakarusa, IN 46573, (800) 582-3454. §



Grott The Lock Doc's fleet of Utilimaster Aeromates.



by Jake Jakubowski

Simplex(ly) Profitable!

"I let go of the door and was promptly locked out! My day was becoming less than serene."

The first time that I encountered a Simplex lock, I was doing some rekeying in a warehouse, and the lock was on a computer room door. I looked at it and thought, "I wonder how you'd service *that* thing?"

My second encounter with a Simplex (Model 1000), was when the maintenance man at the same warehouse called me and asked me to come over, and "check one of the door knobs." You guessed it! Up to the computer room door we went; and "Buck" says, "We can't get the outside knob to open the door. Ya' punch the buttons, turn the knob, and nothin' happens. Fix it for us, Jake. Here are the keys."

Using the combination that Buck had given me, I punched the buttons, turned the knob, and sure enough ... nothing happened! I stepped into the computer room, closed the door, turned the *inside* knob, and opened the door. Holding the door open, I punched the buttons, turned the outside knob and still nothing! At least the condition had not gotten any worse! I tried my "inside the room" trick, and, by golly, the door opened again.

At that point, I concluded that there was probably something wrong with the outside knob, or maybe one of the combination buttons was kaput. (I know that you are impressed with my deductive prowess, but you must understand, this was my first Simplex. Things get even better, I promise.)

I know that I am going to have to take that sucker off the door, and "examine" it if I am going to have any chance at all of "fixing" it. I quickly found the inside knob retainer, depressed it, pulled the knob, let go of the door, and was promptly locked out! My day was becoming less than serene.

The young lady that responded to my frantic knocking was unable to turn the spindle without a knob on it. In fact, it took some explaining before

she understood what I meant by the word "spindle." Boy! Civilians! On my way around the *outside* of the building to the *exterior* entrance to the computer room, I stopped at my truck to get something to wedge the door. Yeah, I'm a fast learner.

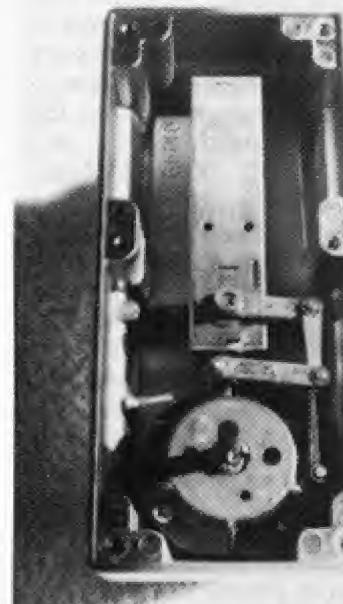
Using one of the keys that Buck had given me, I inserted it in the lock at the top of the interior trim plate. After removing the threaded lock, I found that the trim plate was still firmly attached to the door. Discovering the threaded ring over the knob spindle, allowed me to remove it, and the trim cover plate. Now, I was getting somewhere! After removing the *next* backing plate, I was able to remove the lock housing from the door. Just for the fun of it, I also removed the latch.

Then came the exciting part. With the lock housing off the door, and assorted bits, and pieces, of a Simplex 1000 scattered on the table I had commandeered, I decided to get to the heart of the problem by removing the back plate on the lock housing itself. I remember thinking, "Oops!" (See photograph 1).

At that point, Buck came back and wanted to know how I was doing. I told him that I was going to have to take the entire lock assembly back to my place in order to "bench test it." Hey, you have to admit that was better than telling him I didn't know what I was doing!

I put a temporary entry set on the computer room door, and headed for a friend's lockshop, about forty miles away. Man, I needed help! Jim determined that the combination chamber had given up the ghost. He replaced the defective chamber (see illustration 2), reassembled the lock housing, tested it, and sent me on my merry way.

After leaving Jim's shop, I did several things in rapid succession. I reinstalled the repaired lock on the computer room door, collected my coin (enough to



1. The back removed from the Simplex.

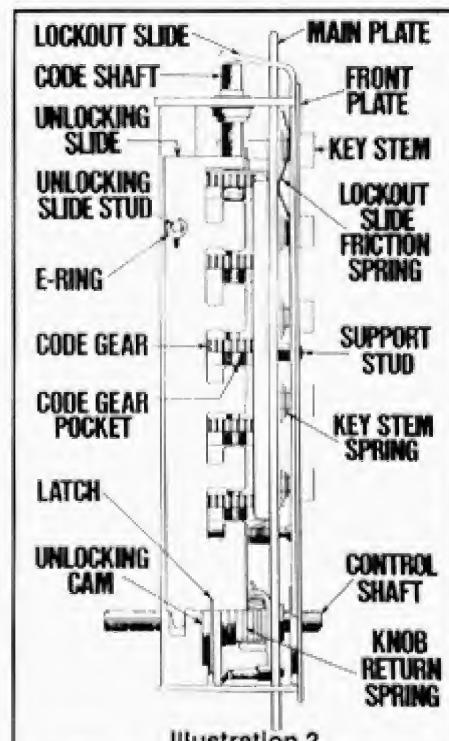


Illustration 2
A Simplex Combination Chamber

make the trip to Jim's worthwhile, and enough to show me that there's money in them thar' Simplexes!), and rushed home to call Simplex! Brad Aylett, at Simplex, arranged for me to attend the next orientation class they held.

My next experience with a Simplex came when one of my customers that has a restaurant wanted something "to keep the back door locked, that didn't need keys." Was I ready for that?

You can bet your whatever, I was! I told my customer the advantages of using a Simplex L-1000 (Lever handle). He wanted to know if he bought one, could I fix it if it broke. Could I? I explained that I was *factory trained* (well, sort of) in servicing Simplex products.

Photograph three shows the L-1000 installed on the restaurant's back door. Since the door already had a 2-3/4" backset entry set on the door, I only had to drill three holes. (One, 1" hole, for the combination change access, and two 1-1/4" holes for the two mounting screws.) The *only* modification I had to make to the standard prep, was to widen part of the latch hole to allow for the anti-friction stub of the Simplex latch.

Photograph four shows the Unican Roller Strike (Part # 1000-14), which will fit A.S.A. prepped frames. The Roller Strike is definitely an improvement over the standard type strike, as it allows for bind-free latch retraction. That bind-free retraction is particularly beneficial when you have door pressures that would interfere with normal latch operation. The 1000-14 can also be used for standard locks where binding may occur.

Another installation was on a steel door that had a full mortise lock on it. (Sorry, I did not get photos of this one.) In order to cover the odd prep holes on that door, I used an accessory made by MAG Engineering, for Simplex. It is a 15" long filler plate (Part # 1000-17), with the Simplex preparation already in the plate. That filler plate *really* simplifies that type of conversion.

Photograph five shows a Simplex latch installed on a new door of a restaurant we service. Again, I am using the standard A.S.A. prep with the only modification being for the latch, as mentioned before. Photograph six shows the 1000-14 strike installed in the frame. The reason that I install the latch, and then the strike is that I want to check (and, double-check) the operation of the latch and strike *before* I assemble the entire lock.

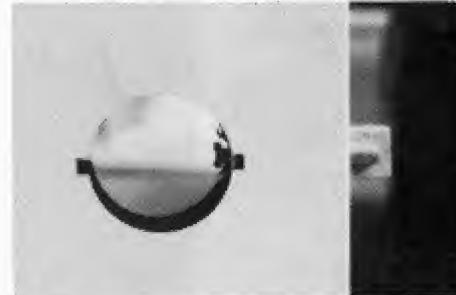
If the door, and frame are in proper



3. The first Simplex L-1000 I installed.



4. The Simplex Roller strike.



5. Latch Installed in new door "prep."



6. The 1000-14. A super strike!



7. The Interior back plate attached to lock housing through the door.

alignment, when the door latches, the most you should hear is a *gentle* click! If the door slams, bangs, catches, or binds, you need to correct the door problem before you complete the installation of the lock. By insuring that the door operates smoothly, you guarantee a longer life for the latch, and eliminate unnecessary call backs for yourself.

The next step of the installation is attaching the back plate to the lock housing. After inserting the lock housing through the cross-bore, and engaging the latch with the cylindrical drive unit assembly (*these part names are the one thing that is not so simple about Simplex*), you attach the back plate with the long 1/4" screws provided. (See photograph 7.) I then used "TEC" self-tapping screws to attach the back plate to the door.

Install the trim cover plate, combination change access lock, and the threaded ring over the knob spindle, put on the interior lever and the job is complete. (See photograph 8.) The only two things you need to do now is *re-check* the operation of the door and latch, collect your shekels, and go home. Photograph nine shows the completed installation from the outside. Did good, didn't I?

Continued on page 98



8. Lock with all interior hardware installed.



9. Exterior view of installation.

Bits & Pieces

Informative Tidbits For The Security Industry



by Tom Seroogy

From Dave Goldberg of Action Lock & Key Co., Fremont, CA, we received notice that Chevrolet is going to replace the knock-out plugs with a bar code tag for ignition keys on the F and Y body styles (Camaro, Firebird and Corvette).

Apparently, GM is in the process of installing a networked bar coding system to all US dealers. Currently the vehicle ID number, as well as other numbers in various places on the vehicle, are bar coded. By using the bar coding system, GM dealers can access the vehicle's service history from anywhere in the country.

Now it looks like there's a move towards storing the key codes in a similar manner. According to the bulletin, the key code is displayed below the bar code on the tag, and only the ignition is affected. (*See illustration 1.*)

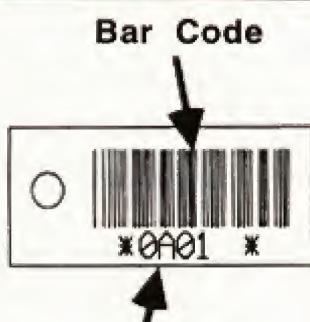


Illustration 1

66 manufacturers. The guide is designed to help locksmiths choose correct products when it is necessary to substitute one piece of hardware with another. The guide is especially helpful when trying to substitute a discontinued product with one that is equivalent.

The guide bases the comparisons on ANSI guidelines and are categorized as "or equal" and "or substitute" basis. Products are also grouped and compared on cost value.

Such products as cylindrical, mortise, unit, and interconnecting locks and panic exit devices are included. Auxiliary locks (cabinet and drawer locks, padlocks and electric strikes) as well as a keyblank cross reference guide (featuring over 1,800 keyways) is also included.

For more information, contact Dalax, Inc. at 1314 Huntington Dr., Richardson, TX 75080; or call, 214-234-8009.

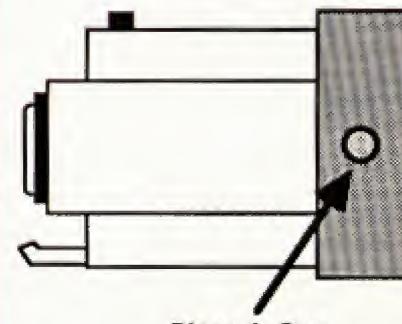
cavities of the deeper wheels.

Thanks Steve.

The results of a recent survey by Auto Security Products show that many locksmiths consider the newer style Toyota ignition cylinders to be unserviceable. The styles involved include the version where the facecap is staked to the shell or body of the cylinder, and the version that holds the facecap to the shell using two pins at the sides of the facecap. (*See Illustration 2.*)



Staked cap



Pinned Cap

Illustration 2

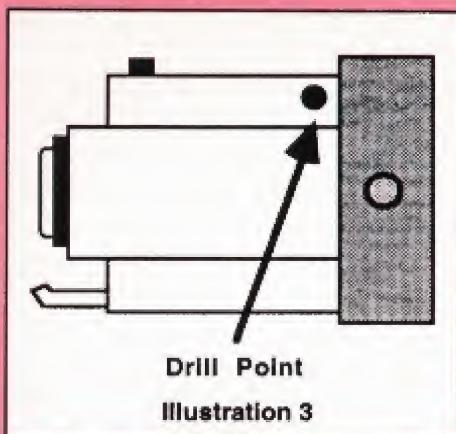
Steve Stinus of Apogee Locksmithing, Fairless Hills, PA, shared this with me regarding a 1992 Pontiac Grand Prix GTP. This car is loaded with all the goodies including radio controls in the hornpad. This hornpad, unlike the older versions that were held to the steering wheel with velcro, uses clips to hold it in place. To remove the pad, place a small screw driver behind one of the corners of the pad and gently pry the corner up. Then pull the rest of the pad free. This leaves two horn switches left on the wheel.

According to Steve, if these are left in place it is necessary that the bolts for the wheel puller be about 5" long, due to the depth of the wheel. Otherwise, remove the two horn buttons and a standard puller can be used.

Another option is the E-Z Pull GM wheel puller by Sieveking Products Company. This puller, made specifically for GM steering wheels, is a small, one piece unit that easily fits into the

To service either version a facecap retaining pin located at the top of the shell must first be removed. To do so, drill a hole at the side of the pin. After gaining access, pry the pin up and out. (*See illustration 3.*)

Dalax, Inc. has just released the new Lock Hardware and Panic Exit Device Complete Cross Reference guide. The guide includes over 30,000 items from



After removing this retaining pin the facecap of the staked style ignition can be removed by using a drift punch or scratch awl to gently tap on one stake and then the next. Alternate tapping the two stakes until the facecap falls free.

To replace the cap, put the cap back into position with the stakes coming up through the holes of the shell. Then, reapeen the stakes.

For the other style, after removing the retaining pin at the top of the shell, gently tap the lock against your workbench to remove the side pins. Many times these side pins are loose enough to fall out. If not, drill a hole from the back of the lock, behind the

pin. After reaching the pin, use a scratch awl to back them out.

Reverse the procedure to reassemble.

not possible when using the larger 5/32" cutter supplied with the machine.

*And finally, a free catalog showing the entire Framon line.

For the Framon user (or those looking forward to using one), here's a whole store full of new goodies available from Framon:

- A new video showing cutting procedures for the entire line of Framon machines.

- Two new cutters, the FC7863 and the FC8735. The FC7863 for Sargent replaces the FC7850. This new cutter allows original Sargent "bull-nose" pins to bottom out properly. The FC8735 is designed primarily for the automotive keys where deep cuts in the first position tend to cut away the shoulder of the key.

- New spacing block number 5 that includes the following spaces: .083, .085, .091, .096, .097, .0985, .118, .119, .126, .129, .145, .155.

- New 3 mm cutter and guide for the Framon sidewinder machine. This cutter allows the locksmith to completely bottom out all the cuts when cutting keys. This is sometimes

After taking a small informal survey of the autobody shops and garages in the greater Chicago area, I found:

- Only a few knew that replacement locks could be keyed to fit the customer's original keys and lockset.

- All go to dealers for replacement lock parts.

- And, less than 10 percent call a locksmith for servicing locks on their customers' cars.

Considering that locksmiths can supply decent aftermarket locks keyed to a customer's key, I think it's time for the locksmith to target a new market!

One of the few factors that help us locksmiths determine who our distributors are is the accuracy and speed in which we receive material. Currently, many distributors are able to fill the need for overnight deliveries

Continued on page 101



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The Lighter Side

When You Happen To Be In The Neighborhood



by Sara Probasco

"I must say, you're not in a very good mood," I said, trying to chide Don into smiling. I wasn't successful.

"You wouldn't be, either, if you'd been through what I have, today."

I was afraid to ask.

"Just tell me one thing." I pointed to his feet. "Why are you wearing those old tan loafers? I could have sworn you had on black work shoes when you left the shop, a while ago."

"I don't want to discuss it," Don replied glancing out the front glass at the dreary weather.

Unlike our typical spring days, this one had turned surly before sun-up and was growing progressively worse. An unseasonable cold snap had ridden the coattails of a blustery rain storm, leaving the countryside shivering in a soggy mess. Into this scenario, Don had charged out to answer his first service call of the morning.

Ordinarily, the problem would have been simple enough to solve. The narcotics task force had seized two vehicles in a drug bust and required sets of keys before offering them at auction. One was an Oldsmobile, the other a Lincoln. A piece of cake.

Wrong.

Murphy strikes again.

According to Don (when he finally got around to telling me) the Olds presented no real problems, except for underestimating the frigid wind. He was finally being forced to pull his service van close enough to the vehicle to use his open door as a shield.

The Lincoln was another matter. Because various locks had been changed on it, no two could be opened with the same key. Don sighed and began impressioning the ignition.

"It's too dark in here," he said to himself, and he stepped from the driver's door, heading to the van for his light.

That was his first mistake.



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As he walked, he was examining the marks on the key, oblivious to his surroundings.

That was his second mistake.

The wind hit him as he rounded the front of the vehicle. With a gasp, he doubled into a knot and began to run. Then he stepped into a rain-filled hole. Muddy water sloshed over the top of his shoes, soaking his socks and the hems of his trousers. At that point, his price went up.

Fortunately, Don carries an old pair of loafers in his van so he can change shoes when his feet get tired. Reaching the van, he stripped off his socks and shoes, wrung out his trouser hems and stepped into the loafers.

"Don? What in the world are you cooking, over here?" The shop-owner from next door had come down our shared hallway into the back room of our shop. His face was screwed into a look of distaste.

"I'm glad you said something," said one of our employees. "I was about to decide my wife had packed a rotten orange in my lunch."

"Just hush, all of you. Not a word," Don replied. He walked to the microwave and extracted a steaming pair of socks. "I was just trying to dry these out," he explained amid the guffaws.

The socks were still wet, but considerably warmer, when he pulled them on and departed for the next service call of the day.

"About twenty miles out of town," the woman had said. "We just need you to get a couple of locks off a hunter's cabin for us, so we can get in. They gave up the lease and went off with the keys. You can't miss the place."

Well, if there's anything we have learned, living in rural southwest Texas, it is:

1. People out here have no sense of distance
2. The work required usually exceeds the work described.
3. You CAN miss the place.

Don traveled at least thirty-five miles before reaching the turn-off she had described. From there, it was

only five or six more miles up a rocky road—which really wasn't a road at all, in the true sense of the word. Beneath much of the top soil in the brush country lies a shelf of rock. This makes grading a smooth road very difficult. A further problem existed: there was no top soil to grade. The rock was the road. As you may imagine, travel was bumpy and slow.

After stopping three times to open gates, Don saw a house ahead where the road seemed to end. He couldn't remember if the woman had said go *through* five gates or *past* five gates. At any rate, he had already spent more than an hour in transit. Surely this was the place.

Wrong again.

When he stopped, a man came from the house to greet him. "Are you lost?" the man asked.

"Well, that's debatable," Don replied. "Did you call for a locksmith?"

"No, sir."

"Is this the Whitley place?"

"No, sir."

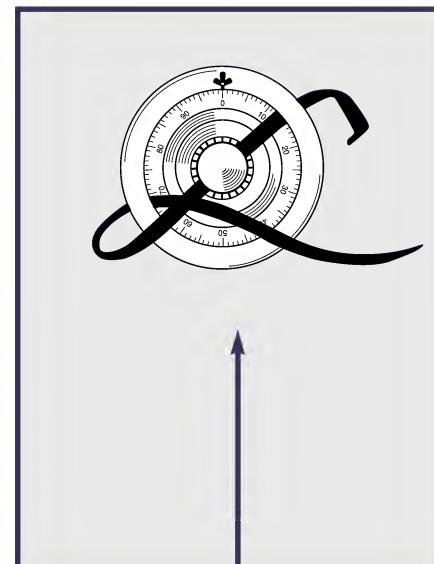
"Then, I guess I'm lost."

He wasn't, really. He just hadn't gotten there yet. The man was kind enough to point the way. Although the road seemed to stop at that house, it actually passed between the house and the barn and continued through two more gates before it reached the Whitleys' ranch, a few miles farther along.

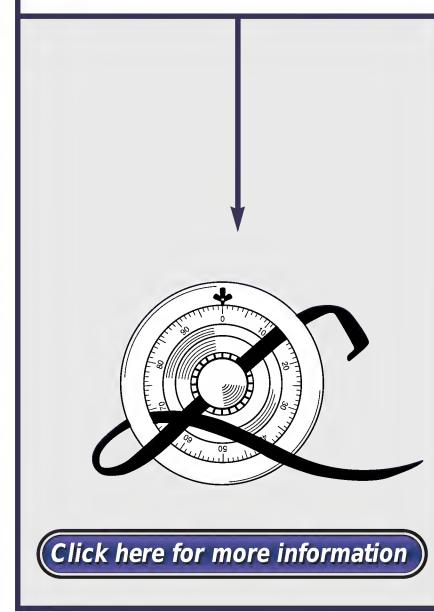
"But, since you're here," the rancher continued, "how about making me a set of keys for that pick-up, over there? I've been meaning to have that done and just never got around to calling anybody to come out."

Promising to stop on his way back, Don proceeded to his destination. There he found knob locks and deadbolts on the cabin doors, rather than the anticipated padlocks, and two keyless cabins, rather than one.

"But look at it this way," Don said when recounting the events, "folks that live 'way off like that recognize the value of time and travel. The Whitleys never did say to me, 'The next time you happen to be in the neighborhood...'" \$



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Locksmith Industry Interview: Laurie Simon

Owner of H & L Simon of Dallas, Texas, Laurie is a manufacturer's representative for Jet Hardware, A1 Security Products, and Lockwood. Although located in Texas, Laurie's roots in the lock hardware industry stretch back 106 years to the south side of Chicago, Illinois.

It was here in 1887 that Joseph Simon started what the following four generations of Simon's have continued. Throughout this time the Simon's deep involvement with lock hardware have produced many of the machines and locksmith picking and impressioning techniques and tools used today.

Laurie has some keen insights into our industry.

Asked what changes he has seen in the locksmith industry:

"Back when I first started we didn't have the massive amount of education that there is today," says Laurie.

"Today there are educational organizations, associations and even help from the manufacturers.

"Locksmiths need to take advantage of this, to use it, get involved.

"Locksmiths need to get involved with electronics. We've handled masterkeying and high security keys

and locks. But the locksmith must broaden his knowledge.

"Even staying up with changes in ADA requirements demands education.

"Constant education is an absolute must," said Laurie.

When asked how to stay competitive in the future, Laurie states, "The locksmith needs to know original equipment, how to upgrade and how to make substitutions for equipment that is no longer manufactured. If a substitution is necessary he needs to know that the 'substitutions are equal or better'."

"There's one thing a Builder's Square or large chain store cannot do," says Laurie, "they have sales people that can point you to a door knob or a drill, or even to certain types of lumber. What they don't know is application. They don't know existing conditions such as backsets, functions, lock preparations, or the condition of the doors and frames. This is a key ingredient to the locksmith's success."

"For example," Laurie continues, "If a customer has a circumstance demanding certain lock functions, the locksmith should know whether to use, let's say, a D53 or a D66. Or, if the customer has to replace a mortise lock,



Laurie Simon

the locksmith should know what substitutions are available, and what, if any, modifications need to be made.

"The salesman at the store won't or can't do this!"

"The locksmith's ability to compete is dependent on his awareness of what hardware currently exists; what hardware has been out there; when necessary, how to make substitutions with equal or better hardware; and be able to match hardware to the application.

"Finally," concludes Laurie, "there are many shops out there today that are competing. They have stores with good visibility; clean, well stocked show-rooms and many displays. It's pleasant to walk into their shop. It's just good marketing."§

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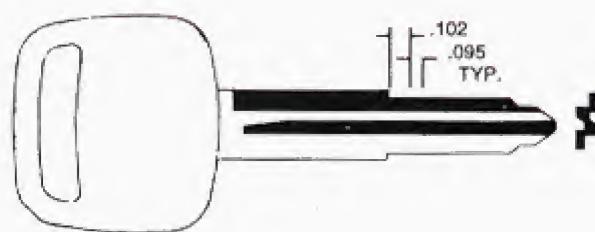
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The
National
Locksmith

Toyota "N" Series Codes

N0001-2000



SPACINGS

1. 0.102	4. 0.386
2. 0.197	5. 0.480
3. 0.291	6. 0.575
	7. 0.669

DEPTHS

1. 0.323
2. 0.299
3. 0.276
4. 0.252

KEYBLANKS

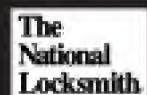
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Silca TOY46R
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Toyota "N" Series, N0001-2000

No.	Code	No.	Code	No.	Code	No.	Code
0001	-1231223	0051	-3213113	0101	-1323124	0151	-2343431
0002	-2312344	0052	-3132443	0102	-3231121	0152	-1213133
0003	-3323421	0053	-3321231	0103	-3113221	0153	-1324331
0004	-1233121	0054	-2244213	0104	-3312434	0154	-311344
0005	-3112321	0055	-3122113	0105	-1234431	0155	-2124211
0006	-2134223	0056	-2131234	0106	-3221131	0156	-2343423
0007	-3112124	0057	-3131224	0107	-2231231	0157	-3324234
0008	-3112431	0058	-1244231	0108	-3242134	0158	-1344224
0009	-1131224	0059	-1233424	0109	-1313434	0159	-3112123
0010	-3113344	0060	-3313211	0110	-1131244	0160	-1242113
0011	-3242231	0061	-2334424	0111	-1342234	0161	-1343424
0012	-1342211	0062	-2342331	0112	-2313424	0162	-2134231
0013	-2342423	0063	-3121123	0113	-2134331	0163	-2113123
0014	-2124313	0064	-2242113	0114	-3224423	0164	-1132421
0015	-2133123	0065	-2243311	0115	-1334234	0165	-3342213
0016	-1322423	0066	-2131124	0116	-1134213	0166	-2312133
0017	-2242344	0067	-3124431	0117	-1313124	0167	-3113423
0018	-2342324	0068	-2133421	0118	-3343121	0168	-1322421
0019	-1231231	0069	-1323431	0119	-3224311	0169	-2323134
0020	-2134424	0070	-3243134	0120	-2342311	0170	-3224211
0021	-1312323	0071	-2213123	0121	-1342424	0171	-3124321
0022	-2234211	0072	-2342124	0122	-3322421	0172	-3112244
0023	-2231243	0073	-1312124	0123	-3134243	0173	-2324431
0024	-2123123	0074	-2334311	0124	-1313344	0174	-2233124
0025	-2122311	0075	-1344211	0125	-2334234	0175	-2311234
0026	-3123223	0076	-2331213	0126	-3112313	0176	-3234223
0027	-1242234	0077	-1231323	0127	-2133423	0177	-1234421
0028	-2242311	0078	-3244233	0128	-2242431	0178	-1243121
0029	-2243431	0079	-2243313	0129	-2331321	0179	-2134233
0030	-3124423	0080	-2124243	0130	-1322431	0180	-1234234
0031	-2343123	0081	-1342243	0131	-1233131	0181	-3234311
0032	-3242113	0082	-1342443	0132	-3133424	0182	-1313423
0033	-2212431	0083	-2133421	0133	-3324211	0183	-3212131
0034	-1224244	0084	-3121233	0134	-3121344	0184	-1133431
0035	-3131124	0085	-2344224	0135	-2233123	0185	-1234243
0036	-1344311	0086	-1312133	0136	-2342123	0186	-2312113
0037	-3232131	0087	-3213431	0137	-3244223	0187	-3133124
0038	-1343231	0088	-3311231	0138	-3213423	0188	-2244313
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0042	-2234213	0092	-3224421	0142	-3134321	0192	-3312134
0043	-1334213	0093	-1343121	0143	-2244234	0193	-1322311
0044	-3244224	0094	-1223424	0144	-3342121	0194	-3124244
0045	-2311233	0095	-3113231	0145	-2124424	0195	-3112343
0046	-3313424	0096	-1242133	0146	-3112234	0196	-1331324
0047	-3342113	0097	-1324221	0147	-2243421	0197	-3122311
0048	-1124234	0098	-3312211	0148	-1134421	0198	-3234423
0049	-1321331	0099	-3124243	0149	-2342421	0199	-3124311
0050	-1324244	0100	-2312433	0150	-2213423	0200	-1224331



Toyota "N" Series, N0001-2000

No.	Code	No.	Code	No.	Code	No.	Code
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0202-1342233	0252-1231343	0302-2243133	0352-2331224				
0203-3223424	0253-3113224	0303-1334223	0353-1321313				
0204-3242343	0254-1313213	0304-3233121	0354-2231331				
0205-2322311	0255-1134431	0305-2242133	0355-3113431				
0206-3223431	0256-1313324	0306-2344223	0356-1331124				
0207-1312244	0257-2131133	0307-1312324	0357-1311334				
0208-2234244	0258-3324311	0308-3231311	0358-3124344				
0209-3121331	0259-1331244	0309-2311334	0359-1242343				
0210-1234221	0260-1331223	0310-2312313	0360-3134423				
0211-2332131	0261-2324311	0311-3123234	0361-1342311				
0212-2134211	0262-3242421	0312-2123421	0362-3344213				
0213-3242344	0263-1134243	0313-2342133	0363-1124313				
0214-3124433	0264-2123133	0314-1342323	0364-2122431				
0215-1124331	0265-3242213	0315-2312431	0365-1331213				
0216-3211313	0266-2331124	0316-1242344	0366-1342133				
0217-3231134	0267-1243131	0317-2342131	0367-1343113				
0218-3243123	0268-2311324	0318-2123121	0368-1344233				
0219-3123244	0269-3312344	0319-3344311	0369-2233131				
0220-2342121	0270-2311223	0320-1312421	0370-2343424				
0221-3312321	0271-1344234	0321-2311331	0371-3212424				
0222-2231311	0272-3343124	0322-3311321	0372-2334213				
0223-2343121	0273-3123443	0323-1334224	0373-3113443				
0224-3342244	0274-2234421	0324-1124421	0374-3122431				
0225-2312134	0275-3231321	0325-2344221	0375-2334223				
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0228-1213134	0278-2123431	0328-2242443	0378-1231123				
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0230-2342243	0280-3123123	0330-2123134	0380-1122423				
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0233-1343421	0283-1332311	0333-1342343	0383-3123434				
0234-2344313	0284-2113231	0334-2232131	0384-3134224				
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0240-3133211	0290-3344234	0340-1324311	0390-1231334				
0241-2312434	0291-1133124	0341-2331123	0391-1131323				
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0245-3121334	0295-3312243	0345-2231233	0395-3122434				
0246-1312123	0296-3212311	0346-2133424	0396-2312343				
0247-2134243	0297-2231334	0347-3112344	0397-2313324				
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0249-1311324	0299-1133421	0349-2342334	0399-2211331				
0250-2344243	0300-2213134	0350-2243123	0400-1324421				

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The
National
Locksmith

Toyota "N" Series, N0001-2000

No.	Code	No.	Code	No.	Code	No.	Code
0401	-1233421	0451	-3232311	0501	-2321131	0551	-2334211
0402	-2242134	0452	-1332423	0502	-3122343	0552	-3132244
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0404	-3134311	0454	-3213424	0504	-1324223	0554	-3211331
0405	-2244311	0455	-3312424	0505	-2342134	0555	-3234231
0406	-1212431	0456	-2213113	0506	-1124224	0556	-3312421
0407	-1343131	0457	-1332421	0507	-3124424	0557	-2343421
0408	-2331131	0458	-2311313	0508	-3223423	0558	-1342331
0409	-3121133	0459	-3342311	0509	-2132431	0559	-3213421
0410	-3322431	0460	-3311224	0510	-1131234	0560	-1224234
0411	-2113313	0461	-3124343	0511	-3224424	0561	-1342321
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0418	-3112231	0468	-2312321	0518	-2242434	0568	-1342431
0419	-2242313	0469	-1234231	0519	-2334421	0569	-3242431
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0450	-2343124	0500	-1233423	0550	-3342431	0600	-1342124



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Toyota "N" Series, N0001-2000

No.	Code	No.	Code	No.	Code	No.	Code
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0603	-1213313	0653	-2131344	0703	-1232331	0753	-3311243
0604	-1342123	0654	-2313113	0704	-1342433	0754	-3132344
0605	-2131244	0655	-3342421	0705	-2322331	0755	-1132231
0606	-1242131	0656	-2131123	0706	-3213231	0756	-3244311
0607	-2311344	0657	-1212421	0707	-3221331	0757	-3132311
0608	-3342321	0658	-3212431	0708	-3121343	0758	-1242323
0609	-2244233	0659	-2234233	0709	-2321313	0759	-3234431
0610	-3131344	0660	-2124421	0710	-3213311	0760	-2131334
0611	-3244221	0661	-2133131	0711	-1231233	0761	-2213421
0612	-2232311	0662	-3242244	0712	-1232431	0762	-2213313
0613	-3131134	0663	-2342233	0713	-3123124	0763	-2234331
0614	-1231344	0664	-2331244	0714	-2323124	0764	-2342431
0615	-2134431	0665	-2331134	0715	-2342433	0765	-1344243
0616	-3342134	0666	-3124213	0716	-1232311	0766	-2312331
0617	-3321311	0667	-2323424	0717	-3312244	0767	-2232331
0618	-3324421	0668	-1312434	0718	-2134244	0768	-2231344
0619	-3112134	0669	-3342211	0719	-1244213	0769	-3112423
0620	-3131321	0670	-2234311	0720	-1244233	0770	-2113431
0621	-2124244	0671	-2342244	0721	-3134211	0771	-1342344
0622	-2123113	0672	-3344243	0722	-1313224	0772	-2112331
0623	-1132313	0673	-3312124	0723	-1123313	0773	-3134434
0624	-1313443	0674	-1344331	0724	-3224213	0774	-1134423
0625	-1132331	0675	-3342124	0725	-3242311	0775	-1234311
0626	-3324213	0676	-1244243	0726	-1311243	0776	-3221231
0627	-2343131	0677	-3122133	0727	-1224431	0777	-2244231
0628	-3312423	0678	-3311234	0728	-1124231	0778	-1132431
0629	-1342231	0679	-2124431	0729	-3213134	0779	-2231121
0630	-1311323	0680	-2234424	0730	-1324224	0780	-1243313
0631	-2312323	0681	-3123421	0731	-1223123	0781	-3123211
0632	-3224233	0682	-1331221	0732	-1342334	0782	-1223113
0633	-2233113	0683	-2324313	0733	-2323113	0783	-3113434
0634	-3122424	0684	-2131233	0734	-1331243	0784	-2312123
0635	-1242334	0685	-2132131	0735	-2343134	0785	-3131244
0636	-3124223	0686	-1131324	0736	-2134423	0786	-1243431
0637	-3123134	0687	-3124334	0737	-3242124	0787	-1242213
0638	-3221311	0688	-3313124	0738	-3312234	0788	-2113423
0639	-2211231	0689	-2342211	0739	-3223421	0789	-3212313
0640	-2313431	0690	-3312431	0740	-2321331	0790	-2234243
0641	-3223123	0691	-3122433	0741	-1231221	0791	-1244224
0642	-1213124	0692	-2321311	0742	-1334243	0792	-1124244
0643	-1231213	0693	-1331344	0743	-1221231	0793	-2342234
0644	-1343423	0694	-2231244	0744	-3224243	0794	-1323311
0645	-3124234	0695	-3212423	0745	-3231244	0795	-1223423
0646	-2243231	0696	-3344231	0746	-2342323	0796	-1313424
0647	-2313213	0697	-2331211	0747	-2121331	0797	-3113424
0648	-1224421	0698	-1242124	0748	-3231124	0798	-1234211
0649	-3224313	0699	-2344331	0749	-3243421	0799	-1231313
0650	-2212313	0700	-1134234	0750	-2311244	0800	-2312443



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No.	Code	No.	Code	No.	Code	No.	Code
0801	-1243421	0851	-1224213	0901	-1334421	0951	-1243134
0802	-2344213	0852	-3243121	0902	-2313434	0952	-1124221
0803	-3112243	0853	-1343124	0903	-3231344	0953	-2343113
0804	-3122134	0854	-3121134	0904	-1334311	0954	-3231131
0805	-2123231	0855	-3212331	0905	-3324224	0955	-2131343
0806	-1232313	0856	-3124231	0906	-2342424	0956	-2233134
0807	-3122124	0857	-2231133	0907	-1312424	0957	-3132321
0808	-2134213	0858	-2342321	0908	-2321231	0958	-3131123
0809	-1231321	0859	-2312334	0909	-2234234	0959	-3113134
0810	-1323113	0860	-1223431	0910	-3133121	0960	-3112213
0811	-1242443	0861	-1242313	0911	-3312131	0961	-1224311
0812	-1133424	0862	-1312334	0912	-3133224	0962	-1323424
0813	-23222431	0863	-1134231	0913	-1242211	0963	-1312443
0814	-3131231	0864	-1223133	0914	-3242121	0964	-1231124
0815	-3312324	0865	-1344213	0915	-3313421	0965	-1313123
0816	-31222321	0866	-1234224	0916	-1332431	0966	-3113234
0817	-2233421	0867	-3243131	0917	-3121244	0967	-3113321
0818	-1331321	0868	-3242321	0918	-2344233	0968	-2324421
0819	-1324234	0869	-1123123	0919	-3122443	0969	-1232131
0820	-2312243	0870	-1224313	0920	-1131243	0970	-2312234
0821	-3134344	0871	-1122431	0921	-3112133	0971	-3123213
0822	-2311323	0872	-1134223	0922	-3124324	0972	-1233231
0823	-3324223	0873	-3224331	0923	-3324423	0973	-1343431
0824	-2311231	0874	-2123424	0924	-3213131	0974	-2243131
0825	-3223113	0875	-1124243	0925	-1323123	0975	-3344223
0826	-2242343	0876	-3312121	0926	-1244221	0976	-2133121
0827	-2334244	0877	-3124313	0927	-1324211	0977	-1224243
0828	-2242433	0878	-3124421	0928	-1342121	0978	-2334221
0829	-2312421	0879	-1323423	0929	-3132131	0979	-1312331
0830	-2233431	0880	-2232431	0930	-1244331	0980	-1312134
0831	-3133421	0881	-1342423	0931	-3243311	0981	-3124331
0832	-2213124	0882	-2313124	0932	-1312433	0982	-2124311
0833	-2121231	0883	-3311324	0933	-1124223	0983	-3132124
0834	-1242231	0884	-3234243	0934	-1231224	0984	-2324244
0835	-3113123	0885	-2131231	0935	-1324213	0985	-2323311
0836	-1221331	0886	-2212331	0936	-1334231	0986	-3311223
0837	-2324242	0887	-2131321	0937	-3121231	0987	-1312313
0838	-2131243	0888	-3122421	0938	-3232421	0988	-1312431
0839	-2313244	0889	-1313321	0939	-3243124	0989	-1342434
0840	-1212424	0890	-2112421	0940	-2124234	0990	-1131334
0841	-2342343	0891	-3313244	0941	-3234221	0991	-1242243
0842	-1334211	0892	-3121243	0942	-3122344	0992	-3134221
0843	-2124233	0893	-3342231	0943	-2231124	0993	-3131243
0844	-3124323	0894	-2231134	0944	-1334423	0994	-2234423
0845	-3324424	0895	-3243231	0945	-1331234	0995	-1231331
0846	-2211313	0896	-2244211	0946	-1342244	0996	-2324211
0847	-3342131	0897	-3231231	0947	-3132421	0997	-2323421
0848	-3242131	0898	-3132121	0948	-1223134	0998	-3112323
0849	-3242234	0899	-3244234	0949	-2344211	0999	-3112443
0850	-1244313	0900	-2331243	0950	-3234234	1000	-1322331



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No.	Code	No.	Code	No.	Code	No.	Code
1001–1342421	1051–1311224	1101–3223134	1151–2331223				
1002–3132123	1052–1134424	1102–3113223	1152–1242324				
1003–2243423	1053–2312424	1103–2123124	1153–1232424				
1004–3312213	1054–3123423	1104–1123424	1154–1232421				
1005–2134234	1055–1313234	1105–2231123	1155–2234231				
1006–1332231	1056–1124431	1106–1312243	1156–1243424				
1007–1311244	1057–1331134	1107–1213424	1157–1231243				
1008–2324234	1058–3224431	1108–1131344	1158–1213123				
1009–3223311	1059–3311213	1109–1134244	1159–1312234				
1010–1231324	1060–3132113	1110–3212421	1160–1232423				
1011–3113244	1061–1123231	1111–2311224	1161–1233134				
1012–2213133	1062–3112331	1112–3342234	1162–1243113				
1013–1122331	1063–1242331	1113–1122421	1163–1243133				
1014–1344223	1064–1123134	1114–1334244	1164–1231134				
1015–1133123	1065–2134313	1115–2334431	1165–1224211				
1016–2313311	1066–3122423	1116–3134213	1166–1311344				
1017–2313134	1067–1243123	1117–1223124	1167–1134221				
1018–1243311	1068–1242433	1118–1244223	1168–1124424				
1019–1242244	1069–1343123	1119–3123311	1169–1234213				
1020–2134311	1070–2244331	1120–3233421	1170–2431334				
1021–3112424	1071–3322311	1121–1224231	1171–4231331				
1022–3231224	1072–3213123	1122–1133231	1172–4431234				
1023–3344221	1073–3133221	1123–1242434	1173–2433431				
1024–2331234	1074–1344231	1124–3312113	1174–4311323				
1025–3132234	1075–1242233	1125–2131134	1175–4213124				
1026–3113213	1076–1233431	1126–1134233	1176–4311224				
1027–2132311	1077–1242421	1127–1234223	1177–4312121				
1028–1334221	1078–2313344	1128–3324221	1178–2422131				
1029–1324313	1079–1343311	1129–1234313	1179–4312311				
1030–1312321	1080–1233124	1130–1311233	1180–4422131				
1031–1231234	1081–1342134	1131–3233124	1181–3433121				
1032–3131234	1082–1242424	1132–2343231	1182–4243231				
1033–3123344	1083–3124233	1133–1242321	1183–4212124				
1034–3244313	1084–3124224	1134–2123313	1184–4212423				
1035–1234331	1085–2311243	1135–1234423	1185–3423224				
1036–3244213	1086–2231343	1136–2231234	1186–4223311				
1037–1242311	1087–2332431	1137–1231244	1187–4243211				
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1039–3234224	1089–3312231	1139–1242123	1189–4213233				
1040–3244231	1090–3224244	1140–1212423	1190–3422123				
1041–1131233	1091–3244243	1141–2324331	1191–4221334				
1042–2243424	1092–2312423	1142–1123431	1192–4221133				
1043–2242334	1093–1242423	1143–1123423	1193–4211233				
1044–3123121	1094–1134224	1144–1242121	1194–4211221				
1045–1232231	1095–1331224	1145–1212313	1195–4313424				
1046–1311343	1096–2123311	1146–1123124	1196–2442323				
1047–1223313	1097–2312124	1147–1311234	1197–4223233				
1048–1243423	1098–1233123	1148–1131343	1198–4224211				
1049–1213421	1099–3123321	1149–1124423	1199–4323424				
1050–1123133	1100–1342313	1150–3113243	1200–4243321				

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No.	Code	No.	Code	No.	Code	No.	Code
1201	-4421331	1251	-4312423	1301	-4221313	1351	-4224311
1202	-4213321	1252	-4244313	1302	-4423131	1352	-4243223
1203	-2431231	1253	-4342234	1303	-4342233	1353	-4313211
1204	-4324221	1254	-4423234	1304	-4232234	1354	-4221211
1205	-3442343	1255	-4313243	1305	-4431324	1355	-4323123
1206	-4421133	1256	-4213431	1306	-4232134	1356	-4311334
1207	-3442231	1257	-4234324	1307	-4332311	1357	-3431124
1208	-4334221	1258	-4344211	1308	-4224234	1358	-4313131
1209	-4231234	1259	-3442133	1309	-4432231	1359	-4421323
1210	-4313423	1260	-2431211	1310	-4212134	1360	-2431243
1211	-3431231	1261	-4312233	1311	-4311243	1361	-2443124
1212	-4423133	1262	-2442234	1312	-4223434	1362	-4343121
1213	-4224334	1263	-3424211	1313	-2423431	1363	-4422323
1214	-4431134	1264	-4423431	1314	-4243224	1364	-4233124
1215	-4432131	1265	-4323121	1315	-4213423	1365	-4343123
1216	-2421323	1266	-4232121	1316	-4244231	1366	-3422113
1217	-3423134	1267	-3423321	1317	-2424321	1367	-4223121
1218	-3424221	1268	-4344223	1318	-3424234	1368	-4312434
1219	-4342123	1269	-4312211	1319	-3422343	1369	-2434331
1220	-4331211	1270	-4424323	1320	-4423323	1370	-4242113
1221	-4431211	1271	-2442211	1321	-4211334	1371	-4213121
1222	-4224213	1272	-4342243	1322	-4244221	1372	-4422324
1223	-4313121	1273	-4221124	1323	-4431323	1373	-4324211
1224	-4212244	1274	-4422123	1324	-3442323	1374	-2421334
1225	-4324224	1275	-3423113	1325	-4311223	1375	-4334224
1226	-3421213	1276	-2422313	1326	-3442243	1376	-4344311
1227	-2434234	1277	-3433421	1327	-4213133	1377	-4422423
1228	-4431123	1278	-4232344	1328	-3443123	1378	-4321131
1229	-4242234	1279	-4213224	1329	-2422433	1379	-4242311
1230	-4312331	1280	-4344213	1330	-4432421	1380	-4424231
1231	-4223213	1281	-3431244	1331	-4231134	1381	-2442213
1232	-4223431	1282	-2423213	1332	-4312313	1382	-4243313
1233	-4212213	1283	-3422334	1333	-3423213	1383	-4433113
1234	-4323431	1284	-4433134	1334	-4233213	1384	-4231224
1235	-4213113	1285	-4343421	1335	-4343124	1385	-4431224
1236	-3423431	1286	-4243131	1336	-4323131	1386	-4433431
1237	-4422433	1287	-3442121	1337	-4311313	1387	-2424323
1238	-4213323	1288	-4431223	1338	-4234234	1388	-4311331
1239	-4242321	1289	-4331344	1339	-4221321	1389	-4243123
1240	-3421334	1290	-3422431	1340	-4421233	1390	-4213223
1241	-4242213	1291	-4242211	1341	-2442133	1391	-4213131
1242	-3442313	1292	-4311321	1342	-2443134	1392	-2423124
1243	-4234323	1293	-4223313	1343	-2442113	1393	-3442233
1244	-2432331	1294	-4234423	1344	-4421321	1394	-4311221
1245	-4423211	1295	-3423244	1345	-3422434	1395	-3422313
1246	-4223433	1296	-2434221	1346	-4334311	1396	-4243133
1247	-4212113	1297	-4223211	1347	-4224331	1397	-4243234
1248	-3434213	1298	-4331234	1348	-2442121	1398	-2431131
1249	-3442124	1299	-4431243	1349	-4231124	1399	-3422423
1250	-4212443	1300	-4313113	1350	-4331213	1400	-4331221



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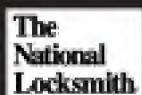
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No.	Code	No.	Code	No.	Code	No.	Code
1401	-4223134	1451	-4424221	1501	-4223343	1551	-4234313
1402	-3442421	1452	-4334421	1502	-4342124	1552	-4312343
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1404	-4312443	1454	-4231233	1504	-3423124	1554	-4224423
1405	-3421331	1455	-2423133	1505	-4232133	1555	-4322131
1406	-4213211	1456	-4213343	1506	-4312323	1556	-4223421
1407	-3443231	1457	-4223423	1507	-3424324	1557	-4232311
1408	-3421313	1458	-3431234	1508	-3421321	1558	-2431133
1409	-4244331	1459	-4421213	1509	-4323421	1559	-4311234
1410	-2432424	1460	-4223231	1510	-2442433	1560	-4223234
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1412	-3422344	1462	-3422124	1512	-3434221	1562	-4223424
1413	-2423434	1463	-4421124	1513	-4434213	1563	-4212343
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1416	-3431121	1466	-4313434	1516	-3424331	1566	-2424423
1417	-3424423	1467	-4211323	1517	-3432424	1567	-4343231
1418	-4234221	1468	-4242343	1518	-3442131	1568	-3431224
1419	-4422331	1469	-3434224	1519	-4221323	1569	-4233224
1420	-2423421	1470	-4232113	1520	-4244223	1570	-3424431
1421	-4211244	1471	-2443113	1521	-4342121	1571	-4213134
1422	-4422124	1472	-4324223	1522	-4242131	1572	-2442134
1423	-4234311	1473	-4211231	1523	-4313231	1573	-4421343
1424	-2443313	1474	-4434331	1524	-4434313	1574	-2421124
1425	-4224431	1475	-3422311	1525	-4224321	1575	-4342231
1426	-4424233	1476	-4423321	1526	-4232124	1576	-4423343
1427	-4224323	1477	-3431243	1527	-2431321	1577	-4431131
1428	-3442331	1478	-3421224	1528	-4344231	1578	-4211234
1429	-4322313	1479	-4421311	1529	-2421123	1579	-4312433
1430	-4223133	1480	-4223324	1530	-2442243	1580	-2423423
1431	-4421131	1481	-4242431	1531	-3422133	1581	-4234334
1432	-3422134	1482	-4422121	1532	-4322311	1582	-4431233
1433	-4313431	1483	-3434421	1533	-4331321	1583	-4224433
1434	-4242123	1484	-4242331	1534	-4431343	1584	-3423421
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1438	-3431211	1488	-3424313	1538	-2431311	1588	-3422433
1439	-3443134	1489	-4212321	1539	-4233421	1589	-4342131
1440	-4424223	1490	-4433421	1540	-4242243	1590	-4212421
1441	-3443131	1491	-4212433	1541	-4313234	1591	-4332131
1442	-4312133	1492	-3424421	1542	-4232321	1592	-4234231
1443	-4211343	1493	-3424224	1543	-3431221	1593	-4423223
1444	-3432231	1494	-4234243	1544	-4213244	1594	-4221134
1445	-4434311	1495	-2421231	1545	-3424311	1595	-4421134
1446	-2423123	1496	-4232343	1546	-2434224	1596	-3442431
1447	-4332421	1497	-4434223	1547	-3421233	1597	-4244321
1448	-4311213	1498	-4311343	1548	-4224243	1598	-4424321
1449	-3442423	1499	-4213123	1549	-2424311	1599	-4421313
1450	-4312123	1500	-4243213	1550	-3442211	1600	-3431213



Toyota "N" Series, N0001-2000

No.	Code	No.	Code	No.	Code	No.	Code
1601	-4224421	1651	-4242231	1701	-4211324	1751	-4342311
1602	-4433121	1652	-4331134	1702	-2423124	1752	-4213234
1603	-4213311	1653	-3424213	1703	-3421131	1753	-4232421
1604	-2421243	1654	-4244213	1704	-3423423	1754	-3432311
1605	-4242121	1655	-3443421	1705	-4234433	1755	-4342331
1606	-4313324	1656	-4311344	1706	-2431223	1756	-2424313
1607	-2434423	1657	-4212131	1707	-2422443	1757	-2431331
1608	-3424321	1658	-4433123	1708	-3431134	1758	-3442234
1609	-4312124	1659	-4322331	1709	-4243311	1759	-4323113
1610	-4211224	1660	-4423231	1710	-2431323	1760	-2431244
1611	-4434211	1661	-4212434	1711	-2421321	1761	-4212331
1612	-4421224	1662	-2423443	1712	-4331324	1762	-4212211
1613	-3443113	1663	-4212424	1713	-3422443	1763	-2424211
1614	-2424331	1664	-4322421	1714	-4244323	1764	-4221344
1615	-4234211	1665	-4223124	1715	-3423123	1765	-4212133
1616	-4233211	1666	-4231311	1716	-3443124	1766	-4422311
1617	-4243243	1667	-4312344	1717	-4344313	1767	-4243121
1618	-3432131	1668	-4423121	1718	-3432421	1768	-4234421
1619	-3431131	1669	-4432311	1719	-4211243	1769	-3422324
1620	-3421323	1670	-3442213	1720	-4334223	1770	-4223123
1621	-4232131	1671	-4342343	1721	-4312421	1771	-4243124
1622	-2422434	1672	-2442123	1722	-4212323	1772	-4423123
1623	-4232243	1673	-4343131	1723	-4224233	1773	-4423421
1624	-4431124	1674	-4422334	1724	-4324243	1774	-3423434
1625	-4311324	1675	-4421324	1725	-4421334	1775	-3421223
1626	-4423124	1676	-3424223	1726	-4221243	1776	-4313124
1627	-4233244	1677	-2433421	1727	-2432431	1777	-4423243
1628	-4334213	1678	-4311244	1728	-4432331	1778	-4321313
1629	-4423313	1679	-4433131	1729	-4431213	1779	-4234223
1630	-4422321	1680	-4242124	1730	-4313134	1780	-4212243
1631	-4242133	1681	-4432423	1731	-4431331	1781	-2422331
1632	-3434234	1682	-4331123	1732	-4231344	1782	-4323311
1633	-4213344	1683	-4421234	1733	-4311233	1783	-4233113
1634	-4312424	1684	-4424311	1734	-4313311	1784	-2442233
1635	-4313213	1685	-3434311	1735	-4212123	1785	-4243221
1636	-4212431	1686	-4342213	1736	-2422431	1786	-2423321
1637	-4331311	1687	-2431224	1737	-3442311	1787	-4213313
1638	-4242421	1688	-3424323	1738	-4431311	1788	-2433123
1639	-2421311	1689	-4231123	1739	-4243421	1789	-3442123
1640	-4343113	1690	-4331224	1740	-4424313	1790	-4233131
1641	-4212344	1691	-4242233	1741	-3433124	1791	-4342211
1642	-2422134	1692	-4244211	1742	-4231244	1792	-4342321
1643	-4344221	1693	-4221311	1743	-4343134	1793	-4233121
1644	-3421221	1694	-4223243	1744	-4422343	1794	-2432131
1645	-4324431	1695	-4422134	1745	-3442433	1795	-2433134
1646	-3423234	1696	-2423424	1746	-4221244	1796	-2433121
1647	-4334234	1697	-3442321	1747	-4313224	1797	-4213213
1648	-4321231	1698	-4213443	1748	-2442431	1798	-3421133
1649	-4342133	1699	-3423211	1749	-4322423	1799	-4221131
1650	-4223323	1700	-2443311	1750	-4313344	1800	-4331243



Continued on page 84

Toyota "N" Series, N0001-2000

No.	Code	No.	Code	No.	Code	No.	Code
1801-3422421	1851-2442421	1901-4231321	1951-4421231				
1802-4233234	1852-4334423	1902-2431213	1952-4213434				
1803-4422313	1853-3421211	1903-3442134	1953-3431344				
1804-3421311	1854-3421244	1904-2442334	1954-3424433				
1805-2431313	1855-2431134	1905-4423134	1955-2431124				
1806-4342134	1856-2434313	1906-3421324	1956-4421243				
1807-2431121	1857-2432313	1907-2423311	1957-2443421				
1808-4243431	1858-4232123	1908-2431123	1958-2421244				
1809-4213231	1859-3442324	1909-4422431	1959-4324311				
1810-4424211	1860-4244233	1910-2421133	1960-4221324				
1811-4342431	1861-4211313	1911-2431234	1961-4331124				
1812-4233123	1862-3423311	1912-2421131	1962-4331121				
1813-3431311	1863-2443133	1913-2423244	1963-4312134				
1814-2424431	1864-2423211	1914-4343431	1964-2431233				
1815-4421123	1865-4233134	1915-2423433	1965-3422331				
1816-4243134	1866-4324231	1916-2421324	1966-4234224				
1817-4211213	1867-4221331	1917-4423324	1967-2433113				
1818-4344233	1868-3431123	1918-4323124	1968-2434223				
1819-4212234	1869-4231231	1919-4221231	1969-4434221				
1820-4423311	1870-4332431	1920-4323423	1970-3422131				
1821-4331131	1871-4431313	1921-3423424	1971-3421343				
1822-2422344	1872-4224324	1922-3442113	1972-4323231				
1823-4423221	1873-4223244	1923-4321311	1973-4324331				
1824-2442343	1874-4423233	1924-4313221	1974-4234213				
1825-4212121	1875-4223321	1925-4234321	1975-4313443				
1826-4212323	1876-4424213	1926-4312431	1976-3422121				
1827-4213421	1877-4331231	1927-4322431	1977-3422321				
1828-4223131	1878-4213324	1928-4342113	1978-2422334				
1829-4243233	1879-3434223	1929-4344331	1979-4211331				
1830-4221233	1880-2442321	1930-4324313	1980-2442324				
1831-4312113	1881-3443121	1931-3431324	1981-4324233				
1832-3443431	1882-4312131	1932-3431321	1982-4232431				
1833-4431221	1883-4234233	1933-4431321	1983-2432421				
1834-3434423	1884-4212311	1934-4223113	1984-4233431				
1835-4221343	1885-4232244	1935-4223344	1985-2421313				
1836-4313244	1886-4221123	1936-4243113	1986-2422113				
1837-3434211	1887-2424234	1937-4423423	1987-4224313				
1838-4433124	1888-4323134	1938-2442311	1988-3434431				
1839-4224231	1889-4431334	1939-4431133	1989-4223443				
1840-3443311	1890-4213243	1940-3431223	1990-4423213				
1841-2423113	1891-4432313	1941-4311231	1991-2433124				
1842-4213433	1892-4422113	1942-4224343	1992-4312243				
1843-3421121	1893-3421231	1943-3421134	1993-4234343				
1844-4313421	1894-2431221	1944-4324421	1994-2421121				
1845-2424433	1895-4422421	1945-4423113	1995-2443431				
1846-4312324	1896-2431324	1946-3422323	1996-2442331				
1847-4231131	1897-4234431	1947-2431343	1997-4213221				
1848-4324234	1898-4334431	1948-3423443	1998-4312321				
1849-2442313	1899-4322424	1949-3432423	1999-4212334				
1850-3442334	1900-4221121	1950-3432431	2000-2421343				

Beginner's Corner

Key Blanks



by Eugene Gentry

Key blanks are a necessity of life for the locksmith, but when first starting out in business, it is hard to decide what brand of key blanks to order, how many to buy, and what selection of blanks to get. There are many brands to choose from so some locksmiths use a variety of brands and others like to stick with one brand.

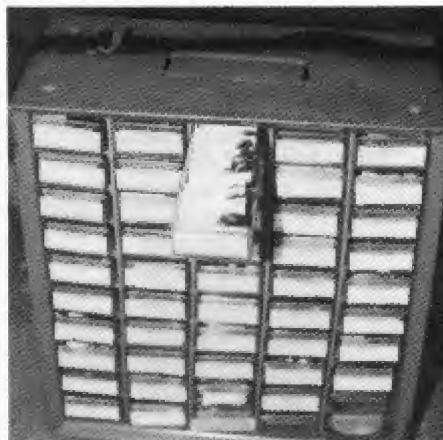
Probably the best way to start is to order an assortment of blanks. For instance the companies that sell blanks will offer an assortment of domestic and foreign auto blanks, ten each of the most popular keys. Or they will have an assortment of house and padlock blanks, ten each of 150 blanks.

I started out by ordering sets of assortments, and when my order came I had two different brands, Star house and padlock key blanks, and Ilco domestic and foreign auto blanks. Later on I had a chance to buy a used twin tower key blank display rack along with a couple thousand Cole key blanks in tin cans. You can imagine the tedious job it was to get them sorted out. For replacements, the Taylor brand was purchased.

Now, as you can see, with different brands and with different numbers on the blanks, you have to keep them in order so you can get the one you want fast. For the domestic and foreign auto, I built a small wooden chest with hooks on the inside, two doors on the front. The auto blanks are lined up with domestic first, "M" blanks all together with numbers above each blank, Ford next and etc.. The foreign auto, each with numbers above the blank, were placed together.

The house and padlock blanks proved to be more of a problem. I had a window van so there was no place to hang them on the wall of the van. At

the hardware store I found a metal case with fifty drawers wide enough so the blank keys would fit sideways. (*See photograph 1.*) The blanks were arranged alphabetically, then with the numbers in sequence. For instance, Chicago blank, CH would be on the front of the drawer and inside would be blanks CGI, CG2, CG3, etc. Between each set, a tab was inserted with the number on it. This worked out well and I could find the blanks easily.



1. Metal chest for key blanks.

I kept the twin tower in the workshop and sometimes transferred blanks to the van. (*See photograph 2.*)



2. Twin tower key display.

The towers are also set up alphabetically, with the name and Cole numbers listed above the blank.

When working with the various brands or just for reference, you should have the key catalogs for each of the brands. For example, Silca and Jet have large catalogs that list every kind of key blank that you can imagine. Listed in the catalogs are comparison charts which tell you which numbers of one brand are compatible to the numbers of another brand.

A valuable book to have on hand is the *Lewis Cross Reference Key Blank Directory*. This book lists the key blanks alphabetically, along with pictures of the keyway, head style, shoulder and tip. It shows the cross reference to the original, Cole, Curtis, Dominion, E.S.P., Ilco, Star, Taylor, and Kustom Lock.

Some of the mobile locksmiths and shops have different ways of displaying their key blanks. Francis Gable, a mobile locksmith in Hereford, Arizona, has a pickup truck with a camper. (*See photograph 3.*) Inside the camper he



3. Mobile locksmith, Francis Gable.

has a 44" x 24' pegboard, reinforced with two inch furring strips. (*See photograph 4.*) The pegboard is tilted at a 45 degree angle so none of the blanks can fall off. The keyboard is organized with domestic and foreign automotive, house and padlock blanks in proper order. Francis uses Star, Ilco, Silca and Jet blanks, and boxes of commonly used blanks are stored under the key board.



4. Mobile unit key display board set at 45 degree angle.



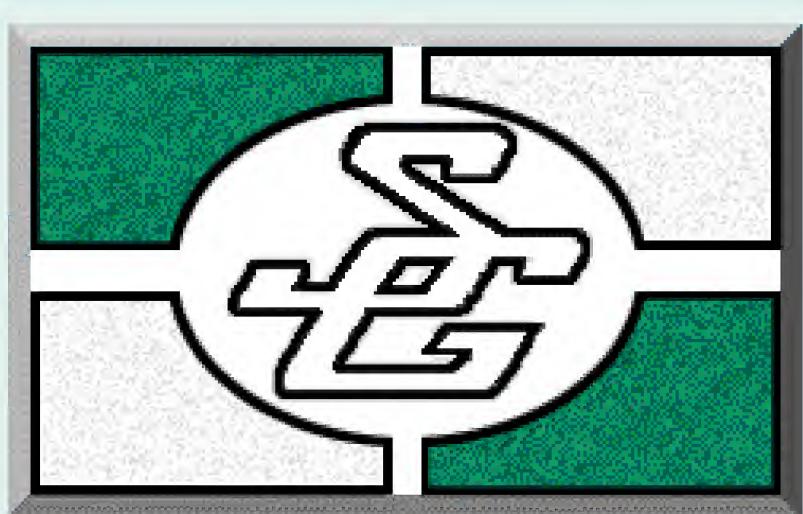
5. Key display board for a shop.

For the shop, photograph five shows a nice key blank display board. This is a pegboard with red borders for appearance. Blanks are arranged alphabetically with tabs behind the blanks listing numbers of five common brands. On each tab is a colored dot indicating the price to be charged for duplicating that particular blank.

One thing I might suggest is that if you go to any garage sales or flea markets, ask if they have any keys or locks for sale. As you can see in photograph six, I have picked up hundreds of old keys. Believe it or not, they have been helpful because there



6. Old keys collected at garage sales. are keys for old desks, chests, suitcases and jewelry boxes. Many times I have found keys in the batch that fit a lock. \$

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Continued from page 47

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National Security Safe

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National Security safes bear the sleek, mar-resistant finish that has become their hallmark. A special finish coat is applied only after multiple sanding and priming operations have properly prepared the safe's surface. No faults will be tolerated by their demanding quality control inspectors.

Features include quadwall armored construction, extra-large chrome plated steel bolts, and an extra-thick door and outer walls.

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Certainly displaying and selling safes not only protects your clients needs, but can be a very important part of your profitability.

Realizing the problem of space limitation in your crowded shop and the cost of displaying safes, the Perma-Vault Safe Corporation has designed a complete line of affordable safes that take up very little room on your display floor or counter.

Working with selected samples and utilizing the "back-up" inventory of your stocking Perma-Vault Locksmith Distributor, will result in good stock turnover with a minimum inventory, resulting in a good profit return.

Perma-Vault models are light enough to be carried into a home, business or institutional facility from your service vehicle. The sales potential is limited only by the effort and imagination of the locksmith who is interested in adding



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profit to his bottom line.

Perma-Vault also has the ability to custom build any safe, large or small, that your clients may need.

Locksmiths have found Perma-Vault to be a well-built, quality product which provides affordable protection for your customer.

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Sentry Group

Two compact Fire-Safe® computer media safes, developed by Sentry Group, have passed the Underwriters Laboratories (UL) fire endurance and explosion hazard test and have been awarded UL classifications. They are the smallest media storage products ever to earn a UL rating.



The valuable and often irreplaceable material stored on computer diskettes and tapes make the protection of such material essential in both home and office environments. Until now, assured protection against fire has not been available in such small units.

The Sentry Model 1710 media chest measures only 8-1/8"H x 14-1/4"W x 11-3/8"D. A space-saving organizer tray for diskettes lifts out for everyday desktop use, and comes complete with dividers, providing easy access to as many as 30 5-1/4" floppies or 60 3-1/2" diskettes.

**For FREE Information
Circle 327 on Rapid Reply**

Wilson Safe Company

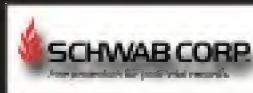
Wilson Safe Company of Philadelphia, Pennsylvania, has been serving the security industry for over 85 years. Currently, the third generation of the Wilson Family is assisting locksmiths in selecting the proper safe for their customer needs.

Wilson serves as distributor for their own imported top quality fire safes. The Diplomat Line offers one and two hour rated units, each with combination and



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keylocks, adjustable shelving and inner storage drawers. The sizes range from .75 to 23.0 cubic feet. All two hour units utilize a group II combination lock.

Furthermore, the Reliance line offers two sizes of undercounter units with dual keylock, B/C rated burglary chests, which are available with Group II combination, or electronic locks, and rotary hopper depositaries, which come with dual key, combination or electronic lock options.

In addition, a new line of TL-15 and TL-30 composite two hour fire rated units are available. The TL-15 and TL-30 composite two hour fire rated units are available. The TL-15 units start in the 1.8 cubic foot size range and continue to the 15.3 maximum space. The TL-30 models range from 4.2 to 30.5 cubic foot sizes and combine Group II combination and high security keylocks, three-way boltwork, and glass relocators.

Wilson also carries a full line of service parts for their safes, including replacement combination locks, keylocks, extra shelves, keyblanks, and touch-up paint.

Wilson Safe can be reached on their nationwide Toll-Free number, and will be ready to provide great technical expertise and friendly service.

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Simplex

Continued from page 57

Photograph 10 shows a Simplex 3000 installed on the door of a pizza delivery store. In this case, the owners wanted a lock that could be left unlocked during the day, if they chose, locked at night, but still allow their delivery people access; and deadlocked after hours when the store was closed. An additional criterion was that the lock had to be mounted on a narrow-stile door! The 3000 met all those requirements.

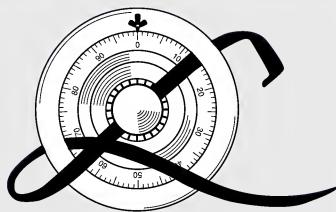


10. Simplex 3000 on business door.

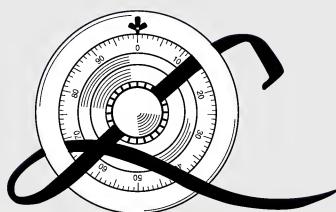


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How well do these locks hold up? Every one that I have installed, I have installed in heavy traffic areas. Most of the doors that I have put a Simplex on, get opened at least one hundred times a day. The 3000 (*see photograph 10*) is, as I said, on a pizza delivery store that might deliver as many as 300 pizzas a day on weekends. That lock has been in service (including a "move" when the store changed locations) for over 2 years now. The 1000's that I have installed are exhibiting that same kind of toughness, and longevity. The only problems that I have had with them have been directly attributable to abuse.

Now, what about the word "profitable" in the title of this article? Figure it out for yourself. A Simplex L-1000, depending on where you buy it, it will probably cost you somewhere in the area of \$285, plus freight. To that you add your percentage of mark-up, service call, and installation charge. How do you figure how much to charge for installation? It takes me about an hour to put in a 1000, if there are no "Murphys" running around at the time. The 3000 took me two hours, but it was the first, one that I installed.

At any rate, I calculate my standard mark-up plus, 1-1/2 hours installation time (it probably averages out to that), plus my normal service call. The way I figure it, a Simplex installation can easily generate as much profit in a couple of hours, as a lot of wage earners out there earn in three to four days. Man, put a pencil to it!

Even more good news, folks! If you take the time to learn how to service, and install (*note that I said service, first*) these locks, you can easily get a minimum equal to twice your normal service call rates (I know it will depend on your area, and the competition, etc.). Of course, you have to go looking for that kind of business.

In a later article, I'll detail a little more about service procedures on a Simplex 1000. That statement will probably send Brad Aylett looking for his antacid tablets. Like everything else about this trade, the more you know, the more you can do, and the more you can do, the more money you can make.

I believe you will find that by actively pursuing the service, (By the way, I have found Simplex to be very helpful with service problems) sales, and installation of Simplex products, you will find, as I have, that it is a profitable pursuit. §



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Bits & Pieces

Continued from page 66

upon request. Adding itself to this list is Security Lock Distributors and their new "Secure America" program.

The program offers locksmiths guaranteed next day or two day delivery anywhere in the continental US upon request. While this service costs a bit more, the ability to service an important customer the next day often outweighs most extra costs. Thank you Security Lock Distributors.

It's taken roughly 150 years, but it's finally complete. Black and Decker has recently consolidated the Corbin and Russwin companies to form Corbin Russwin. While new catalogs and part numbers are going to be used, old part numbers for either brand can still be used to make orders.

All trim packages and keyways will remain unchanged so that existing customers can continue uninterrupted service with their current system.

While the Corbin and Russwin keyways will continue, the bows are going to change to reflect the new company. Old bow styles are available as long as supplies last.

Additional Corbin Russwin keyways and trim styles are going to be added to the line in coming months. §

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